

LEEWARD ISLANDS

REPORT

OF

The Director of Agriculture

For the Year 1948



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STAFF

FEDERAL

Director of Agriculture	R. B. ALLNUTT, B.Sc.Agric. (Lond.)
Chief Veterinary Officer	L. R. HUTSON, D.V.M. (Till 31st May)

ANTIGUA PRESIDENCY

Agricultural Superintendent ..	C. A. S. HYNAM, D.I.C.T.A.
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Experimental Section

Assistant Agricultural Superintendent	E. R. H. MARTIN, D.I.C.T.A.
Junior Assistant	L. A. WATKINS

Central Experiment Station

Manager	R. L. V. HALL
Agricultural Assistant	Vacant
Farm Foreman	R. FRANCIS

Marketing Section

Marketing Officer	L. M. F. PARRIS
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Land Settlement and Development

Agricultural Assistant (Senior) ..	V. G. PEREIRA
" " " ..	V. C. R. HENRY, D.I.C.T.A. (As from September, 1948.)
Junior Assistant	F. E. WILLOCK (On study leave throughout the entire year.)
Senior Instructors	E. ROBERTS; M. WINTER
Instructors	J. M. A. EDWARDS; E. C. SCHOUTEN; D. S. LEWIS; L. E. HAYWOOD; C. E. WINTER; R. ARRINDELL; L. HODGE (Acting.)
Foreman, Greencastle Station ..	R. E. M. WHYTE

ST. CHRISTOPHER-NEVIS PRESIDENCY

ST. KITTS

Agricultural Superintendent ..	R. E. KELSICK
Agricultural Assistant	J. N. W. NICCOLLS (to 29th December)
Manager, Bayfords Farm ..	G. BELLOT
Agricultural Instructor (Senior)	J. DOUGLAS
" " (Junior)	C. WOODS (one vacancy)
Land Officer & Cotton Inspector ..	V. OSBORNE (to 30th June)
Foreman, Experimental Station ..	E. BARNES
Junior Clerk	R. EDWARDS

NEVIS

Agricultural Officer (D. & W.) ..	W. C. CLARKE (to 7th Nov.)
	S. HENRY (Acting) (from 8th Nov.)
Marketing Officer	S. HENRY
Marketing Assistant	F. B. ABBOTT
Junior Marketing Assistants	S. L. NATTA (to July)
(D. & W.)	J. L. BARRET (from July)
	Miss E. HOWELL
Agricultural Instructor (Senior)	R. HULL

Agricultural Instructors (Junior) (D. & W.)	J. HANLEY; L. P. EVELYN; E. NISBETT; J. L. BARRETT (to July); J. CLARKE (from July)
Land Officer & Cotton Inspector	C. N. WILSON
Junior Clerk (D. & W.)	Miss M. STEVENS

ANGUILLA

Agricultural Instructor (Senior)	V. BANKS
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MONTserrat PRESIDENCY

Agricultural Superintendent ..	W. E. BASSETT, M.B.E.
Agricultural Assistant (Cotton Breeding Station)	A. S. HARPER, D.I.C.T.A.
Agricultural Assistant (Land Settlement)	V. C. R. HENRY, D.I.C.T.A. (To September); R. A. F. DEWAR (From September)
Junior Clerk (Forest Officer & Cotton Inspector)	C. A. TAYLOR
Junior Clerk (Forest Officer & Cotton Inspector)	F. A. HORNER
Agricultural Instructors	J. A. TAYLOR; G. A. DAVIS; T. A. ROACH
Agricultural Demonstrator ..	J. R. OSBORNE (To September) N. M. W. MEADE (From October)
Petty Officer Class IIA (Foreman)	T. W. CABEY

Government Marketing Depot & Cold Storage

Junior Clerks	J. A. HUGHES; P. R. RILEY
Chief Petty Officer (Mechanic) ..	H. M. THOMAS
Petty Officers Class II (Mechanic Assistants)	P. C. HICKSON; R. B. ROACH

VIRGIN ISLANDS PRESIDENCY

Agricultural Officer	S. H. ABBOTT
Agricultural Instructor	U. DAWSON

FOREWORD

1. Each of the four Presidencies of the Leeward Islands maintains a Department of Agriculture under the charge of an Agricultural Superintendent or Agricultural Officer, each of whom submits an annual report to the presidential government. The present report consists of information collated from the presidential reports. It has been customary to append to the report of the Director of Agriculture the annual report of the Chief Veterinary Officer, a Federal Officer whose services, like those of the Director of Agriculture are available to the whole Colony. Unfortunately the post of Chief Veterinary Officer fell vacant at the end of May and had not been filled by the end of the year. It is therefore not possible to present a report by the Chief Veterinary Officer on this occasion.

SECTION I.

Review of Agricultural Production

2. WEATHER CONDITIONS

ANTIGUA

The average rainfall recorded from 48 stations in the island of Antigua was 36.41 inches which is 5.35 inches below the average (41.76 inches) for the 16 years, 1933—1948. The lowest (28.38 inches) was recorded at Mercers Creek and the highest (48.87 inches) at the Antigua Sugar Factory.

The three year period 1946-1948 with rainfalls of 37.11, 28.84 and 36.41 inches respectively, all well below average, has certainly been the driest on record since 1933 and is reportedly the driest within living memory.

The severe drought which commenced in January 1947 was not alleviated to any extent until May 1948 and in most areas sufficient soil moisture had not accumulated to have any marked effect on growth until September.

Appendix I and Appendix II give details of rainfall for 1948 and the period 1933-1948 respectively.

In the island of Barbuda a rainfall of 33.07 inches was recorded at Codrington Village.

The drought had a disastrous effect upon sugar cane and food crops and was also responsible for some drop in the average yield of cotton.

ST. KITTS—NEVIS

ST. KITTS

The early part of the year was dry. The rainfall during January and April was up to the average but for the first six months of the year the total rainfall was 3 inches below the average. During the second half of the year rainfall was satisfactory and the island had the wettest December for several years. The mean rainfall of the island for 1948 is 50.24 inches—4 inches less than the mean rainfall for 34 years.

The Meteorological Report for 1948 is given as Appendix III to this report.

NEVIS

The total rainfall for 1948 at five Government stations is given below and is compared with the average rainfall for the previous five years.

	<i>Hamilton</i>	<i>Cades Bay</i>	<i>New River</i>	<i>Hardtimes</i>	<i>Prospect</i>
Rainfall in 1948.. (ins.)	61.44	46.86	40.82	50.16	56.78
Mean Rainfall previous 5 yrs.	62.09	43.69	41.61	51.87	52.54

At Hamilton weather conditions were excellent during the whole year while at the other stations the rainfall was good during the last six months of the year. The rainfall in 1948 was much higher than in 1947 and was equal to or better than the average precipitation of the previous five years.

ANGUILLA

From January to September the weather was dry but during the last quarter of the year 21 inches of rain were recorded at the Agricultural Station

in the Valley district. The monthly rainfall at this station during the year is given in Appendix IV.

MONTSEERRAT

At the Grove Botanic Station, on the leeward side of the island the year's rainfall was 67.01 inches, compared with an average of about 60 inches. Except for rather dry conditions in April distribution in most parts of the island was generally favourable to the cotton crop.

VIRGIN ISLANDS

The total rainfall in Tortola for the year was 51.00 inches. This was 4.59 inches less than the previous year, but was much more evenly distributed and consequently, did more good.

Comparative rainfall figures are given in Appendix V.

AGRICULTURAL INDUSTRIES

3.

SUGAR

ANTIGUA

The Antigua Sugar Factory Ltd. produced only 12,174 tons grey crystals and 3,577.54 tons final molasses.

The reaping of the crop was held up from February 8th until April 9th pending the settlement of a dispute as to rates to be paid. This delay further depressed the yield which was already unavoidably low owing to the drought.

Following this and similar disputes elsewhere a Commission under the chairmanship of Lord Soulbury was appointed "to examine and report on the organisation of the sugar industry in the island of Antigua, including means of production, profits and their distribution, wages and conditions of work, and such other matters including ownership of land" which the Commissioners considered advisable to include in their investigations.

This Commission sat during the month of July. Its report has not yet been published.

The Montpelier Factory, owing to lack of water with which to operate, was unable to go into production in 1948.

Table I gives comparative data for the years 1943-1948:—

TABLE I.

Year.	Area of cane reaped. Acres.	Cane Yield per acre Tons .	PRODUCTION		Tons Cane per ton Sugar	Sugar per acre Tons
			Grey Crystals. Tons	Musco-vado Tons		
1943 ..	9,146	18.3	21,867	235	7.99	2.42
1944 ..	9,310	16.7	16,279	125	7.47	1.76
1945 ..	8,580	17.3	20,663	72	7.15	2.42
1946 ..	9,048	21.8	26,024	122	7.57	2.89
1947 ..	10,269	17.7	22,736	100	7.87	2.22
1948 ..	8,782	11.5	12,174	0	8.32	1.39

Approximations of the percentages of different varieties reaped in 1947 and 1948 are given in Table II.

TABLE II

Acreage of each variety as a percentage of total cane acreage cut.

Variety			1947	1948
			%	%
B3439	..	..	11.7	12.3
B34104	..	..	35.2	22.8
B37161	..	..	48.8	55.7
B37172	..	..	2.0	2.3
B4098	..	..	1.4	6.7
Mixed and others	..	..	0.9	0.2

There was a further increase in the price of sugar. The Antigua Sugar Factory crop was sold at £25. 4s. 7d. per ton f.o.b. Non-contracting suppliers received a total of \$8.14 (B.W.I.) per ton of cane and contractors, including contracting peasant settlements, \$8,378,448.

The area reaped during 1948 was approximately 8,782 acres and that to be reaped in 1949 approximately 8,028 acres.

The extreme conditions of drought during the first eight or nine months of the year resulted in very poor early growth of plant canes and also a severe set-back to ratoon sprouts. Until the rains in September, the prospects for the 1949 crop were very poor, but by the end of the year it was considered that, provided weather conditions continued to be reasonably favourable, a crop of 16,000 tons might be expected.

The volume and value of exports of sugar and sugar products for the last ten years are shown below.

Volume & Value of exports of Sugar products from Antigua

YEAR.	SUGAR		MOLASSES		SYRUP		SUGAR _a	RUM	
	Exports	Value.	Exports	Value.	Exports	Value.	Price f.o.b.	Exports	Value
	Tons	£	Imperial Gallons.	£	Imperial Gallons.	£	£ s. d.	Imperial Gallons.	£
1939	Mus. 101	963					10. 8. 0	5,891	678
	20,547	194,519	575,498	5,044					
1940	Mus.								
	12,472	156,164	441,120	3,446	20,623	1,290	12. 5. 11.	7,389	911
1941	Mus. 164	2,311							
	15,939	183,811	573,354	7,764	33,996	3,102	13. 2. 8.	12,897	1,710
1942	Mus. 100	1,575							
	14,600	185,219	363,297	11,715			13. 10. 5.	17,071	3,175
1943	Mus. 33	400							
	24,488	326,925	120	1			14. 3. 8.	16,365	4,871
1944	Mus. 125	2,152							
	15,307	218,026	87,686	2,408			15. 10. 10.	21,175	4,943
1945	Mus. 72	1,440							
	18,423	299,020	663,148	11,216			17. 1. 2.	19,992	4,289
1946	Mus. 122	2,440							
	23,908	442,884	477,850	7,990			19. 5. 7.	30,317	7,232
1947	Mus. 100	2,625							
	17,848	416,646	362,387	7,680			21. 1. 10	39,143	9,651
1948	Mus.								
	12,622	323,687	634,590	17,220			25. 4. 7.	49,352	13,875

N.B. Mus. = Muscovado sugar. Other figures in column 2 refer to Grey Crystals 96°.

ST. KITTS

A survey which was made by the Department early in the year, showed that 14,118 acres are now under sugar cane cultivation in St. Kitts.

The mean rainfall of the island for 1947 was 48.22 inches—6 inches below the mean for the past 33 years. Distribution was poor and 33 inches of the total precipitation fell during the months of January, May, September and October. For November, which is a most important month in the life of the cane crop, only one inch of rain was recorded. The first six months of 1948 were dry.

In spite of these very unfavourable weather conditions the 1948 crop was estimated at the end of 1947 at 37,000 to 38,000 tons of sugar. The start of crop on the 19th January was prevented by a strike which was called by the St. Kitts-Nevis Trades and Labour Union in connection with a dispute between the Union and the St. Christopher Sugar Producers Association regarding a demand by the Union for a change in the long established method of payment for cutting canes by weight to payment by measurement of the area cut. Grinding was not started until the 10th April and finished on 8th September with a total of 31,393 tons of sugar.

There were many large cane fires, not only during the strike but after the crop had started. It is estimated that 52,000 tons of cane were burnt of which 21,000 tons were sent to the factory. Approximately 7,000 tons of sugar valued at £150,000 were therefore lost.

The St. Kitts (Basseterre) Sugar Factory purchased from growers in St. Kitts 264,956 tons of cane as compared with 280,054 tons in 1947 and 266,576 tons in 1946. The average yield of cane per acre was 26.63 tons as against 26.13 tons in 1947 and 27.99 tons in 1946. The sugar exported amounted to 30,448 tons valued at £819,031 as against 31,631 tons valued at £756,560 in 1947. The sugar was sold to the Ministry of Food at £24. 10s. per ton c.i.f. (£23. 12s. 1d. per ton f.o.b.) plus £2. 15s. per ton to be held by the St. Kitts Government as special funds for Rehabilitation, Price Stabilization and Social Welfare.

The first payment for canes was 28s. 8.81d. per ton. The contractors' share of the profits of the factory was 6s. 2.44d. per ton making a total price of 34s. 11.25d. per ton of cane as against 31s. 2.40d. per ton in 1947. Of the 6s. 2.44d. per ton only 4s. per ton was paid in 1948 as a result of the extended harvesting period. Outside suppliers were paid 32s. 3d. per ton of cane as against 28s. 6d. per ton in 1947 and 27s. 3d. per ton in 1946.

Labourers on estates received approximately 2/- per ton of cane as a bonus and just under £25,000 was distributed at the approach of the Christmas season.

At the end of the year the 1949 crop was estimated at 30,000 to 32,000 tons of sugar.

The production for the past six years is shown in Table III.

TABLE III.
SUGAR—ST. KITTS

Year	Acreage reaped Acres	Tons of cane per acre	Tons of sugar produced Grey crystals 96°	Tons of cane per ton of sugar	Tons of sugar per acre
1943 ..	9,063	29.01	32,161	8.25	3.52
1944 ..	9,310	22.75	27,621	7.71	2.95
1945 ..	8,581	26.22	28,543	7.90	3.32
1946 ..	9,524	27.99	33,513	8.00	3.50
1947 ..	10,718	26.13	34,357	8.33	3.10
1948 ..	9,880	26.63	31,392	8.44	3.15

Note: In the calculation of sugar per acre the weight of sugar produced from canes supplied from Nevis has been excluded.

For the 1948 crop the variety B.37161 occupied 85 per cent of the acreage harvested, and 38 per cent of plant canes was reaped.

During August a Commission, under the Chairmanship of the Right Honourable Lord Soulbury, P.C., O.B.E., M.C., D.L., and with similar terms of reference to the Antigua Commission, visited the island and made their investigation. This report has not yet been printed.

NEVIS

It is estimated that approximately 500 acres of sugar cane were grown in Nevis for the 1948 crop. The crop was disposed of as follows:—

Purchased for shipment to St. Kitts	2,176 tons
Crushed at Hamilton sugar works (estimated)	980 "
" " New River " " "	1,150 "

Total production 4,306 tons

It is estimated that 150 tons of muscovado sugar were manufactured at the sugar works at Hamilton and New River for local consumption.

In Table IV information relating to production, marketing and prices of canes is given for the past ten years.

TABLE IV.
SUGAR CANE INDUSTRY — NEVIS

Year	Canes purchased for shipment to St. Kitts	Canes purchased for the production of Fancy Molasses	Canes used for the production of Muscovado Sugar	Canes Total production	Prices paid for canes shipped to St. Kitts	Prices paid for canes used in the production of Fancy Molasses	Prices paid by B/terre Factory for Nevis canes (includes boitage allowance of 1/- per ton)	Weight of canes paid for by the B/terre Factory	Loss Nevis scales to weighing station St. Kitts
1939	tons 7,256	tons 796	tons 1,809	tons 9,861	s. 13 d. 1	s. 11 d. 0	s. 17 d. 0	tons 7,028	% 3.2
1940	1,601	3,144	900	5,645	11 10½	15 6	16 3	1,521	5.0
1941	4,594	2,787	400	8,781	13 9½	13 9	18 3	4,357	5.2
1942	3,849	nil	900	4,749	13 4¾		18 6	3,663	4.8
1943	2,546	"	750	3,296	14 6½		20 0	2,404	5.6
1944	1,349	"	600	1,949	16 7½		22 3	1,264	6.3
1945	484	"	540	1,024	19 1		25 6	447	7.6
1946	1,698	"	1,022	2,720	22 7		28 3	1,618	4.7
1947	6,510	"	1,544	8,054	23 6		29 6	6,177	5.1
1948	2,176	"	2,130	4,306	24 11½		33 3	1,998	8.2

The average yield of cane in Nevis is estimated at 10 tons per acre.

The marketing of peasants' canes in Nevis for shipment to St. Kitts was undertaken by the Department from 1946. Messrs. Wildy & Co. had marketed these canes for many years prior to 1946.

There was a very high loss on the weight of canes shipped from Nevis to St. Kitts for the 1948 crop. The loss reached 8 per cent. as against the average loss of 5 per cent. in these shipments. Efforts will be made to reduce the loss in future.

Owing to the strike in St. Kitts during the early part of the year a much larger quantity of cane was used for the manufacture of muscovado sugar than in former years.

The following quantities of Fancy Molasses were manufactured at Hamilton sugar works under the Department's supervision and control in 1939, 1940 and 1941:—

1939	..	..	..	..	18,059	wine gallons
1940	..	..	..	..	71,521	" "
1941	..	..	..	..	60,861	" "

N.B.—1 wine gallon = $\frac{4}{5}$ imperial gallon.

The molasses was sold to the American Molasses Company under a special arrangement with the Government. This promising industry had to be discontinued owing to the war and to the difficulty of arranging for the shipment of the product to Canada.

The figures which are given in Table IV show that the production of canes in Nevis fluctuates considerably from year to year and that no permanent increase in production has taken place during the past ten years. In 1930 the acreage under sugar cane was estimated at only 300 acres. There was an apparent revival of the industry in the next two years which was maintained for a few years only. In 1938—39 there were again signs that more interest was being taken by the peasants in sugar cane cultivation and in 1939 the crop reached 9,000 tons of canes but in 1940 production had fallen to 1,600 tons and the apparent expansion in 1947 was not maintained in 1948. Production in 1949 is not likely to exceed that of 1948.

The average yield of cane (plants and ratoons) in Nevis does not exceed 10 tons per acre. This very low yield is the result chiefly of poor cultivation, to a very limited use of pen manure and artificial manures and to periodic drought. It is often stated that the monetary return to the grower from sales of cane for shipment to the St. Kitts (Basseterre) Sugar Factory is so low that there is no incentive to the peasant to give greater attention to his cane crop. There is one way by which the peasant cultivator of sugar cane in Nevis can quickly improve his present financial position and that is by adopting better agricultural methods (cultivation, planting and weeding) and by using more manure—both pen manure and artificial manure. These improved methods of cultivation and manuring would treble his present yield of cane in years of good rainfall. It cannot be denied that at the present time the cost to the peasant for transport of his cane by land and sea is very high but the first step in offsetting this is to increase substantially the low yield of cane which is now obtained from the land. The sugar cane crop is of great value in maintaining soil fertility and the Department has continually stressed its importance to the peasant cultivator and to the economy of the island.

In 1937 Government appointed a Committee, under the Chairmanship of the Agricultural Superintendent, to consider the question of cane transport in Nevis and to make recommendations for reducing its high cost at that time. In its report of the 7th April, 1937, the Committee was unable to make any practical suggestions for reducing the cost of cane transport but submitted the following recommendations for consideration by Government:—

- (a) The provision of shipping facilities at Jones Bay.
- (b) The improvement of the jetty at Newcastle.
- (c) Credit facilities to peasants for obtaining artificial manures and suitable planting material.

The Committee referred in the report to the disadvantage to the peasant cane grower in Nevis in having to pay the cost of sea transport to St. Kitts in addition to that for haulage from his plot to the scales.

Recommendation (c) was adopted by Government, put into operation and is still in operation. Minor repairs have been done to the Newcastle jetty from time to time but considerable improvement of the shipping facilities in this district is required. Shipping facilities have never been provided at Jones Bay.

The St. Kitts (Basseterre) Sugar Factory Ltd. has not agreed to a proposal that canes should be purchased by the Factory at the scales in Nevis and to applications for peasants' canes in Nevis to be purchased at the same rate as is paid to contracting estates in St. Kitts and for an increase of the present boatage allowance of 1/- per ton.

In 1938 the Nevis Agricultural and Commercial Society submitted proposals for a factory in Nevis in which were envisaged an annual potential cane production of 40,000 tons. In May of the same year the Commissioner of Agriculture for the West Indies submitted to Government some notes on these proposals with a provisional estimate of cost, working expenses and revenue.

The question of a small sugar factory for Nevis was considered more recently by the Comptroller for Development and Welfare in the West Indies who came to the conclusion that such a factory would not be an economic proposition.

Quite recently a company was formed for the erection and operation of a syrup factory and rum distillery at Cane Garden estate. But the indication at present are that this proposition has been abandoned.

Before a factory proposal for Nevis can merit serious consideration either by a private company or by Government the cane production in the island must be stabilised. Better agricultural methods must be adopted and serious attention given to adequate manuring and proper cultivation of the crop to obtain increased yields. When the annual production has reached 15,000 to 20,000 tons of cane would be time to consider the question of erecting modern machinery for the production of sugar, syrup and rum. In the meantime action is needed to reduce the present high cost of marketing canes for sale to the St. Kitts factory as an encouragement to cane growers in Nevis, and it is hoped that funds for this purpose will shortly be made available under a draft Colonial Development and Welfare Scheme which is at present under consideration.

The exports of sugar, molasses and syrup during the period 1939—48 from St. Kitts-Nevis are shown in Table V.

TABLE V.
SUGAR—EXPORTS AND VALUES—ST. KITTS—NEVIS

Year	SUGAR		MOLASSES		SYRUP		Prices grey crystals per long ton f.o.b.
	Exports	Value	Exports	Value	Exports	Value	
	long tons	£	Imperial gallons	£	Imperial gallons	£	£ s. d.
1939	36,044	373,154	668,994	8,319	16,700	710	10 2 7
1940	29,155	334,007	1,209	10	69,273	3,586	10 18 8
1941	34,961	444,674	967,657	8,240	60,709	2,655	11 10 0
1942	23,464	235,417	559,238	6,069			13 2 9
1943	36,011	510,961	477	4			13 15 3
1944	27,593	418,485	306,331	4,220			14 15 7
1945	26,666	459,394	1,535,286	33,672			16 19 6
1946	30,739	599,485	679,820	15,576			18 17 8
1947	31,631	756,560	574,786	13,490			20 15 6
1948	30,448	819,031	947,255	21,348			23 12 1

MONTserrat

Some 170 acres of sugar cane was grown mostly near the centre of the island at altitudes not suited to cotton. The syrup produced was used for the distillation of rum.

VIRGIN ISLANDS

Small quantities of cane were grown for the production of rum and for sale as eating cane in St. Thomas.

4.

COTTON

ANTIGUA

The 1947—48 crop was reaped from an estimated 1,554 acres as against 498 acres in the previous season. Total production, including 3,200 lbs. from Bar-

buda, amounted to 208,678 lbs, clean lint and 9,617 lbs. stains (6.2% of the total).

Table VI gives production figures and yields of clean lint per acre for the seasons 1938—39 to 1947—48.

TABLE VI
COTTON PRODUCTION IN ANTIGUA

Season	Acreage Reaped	Clean Lint Produced Lbs	Clean Lint Yield Acre/Lbs.
1938-39 ..	2,000	242,116	121
1939-40 ..	2,645	416,393	157
1940-41 ..	4,826	659,376	136
1941-42 ..	4,197	416,274	99
1942-43 ..	896	93,530	82
1943-44 ..	988	124,732	127
1944-45 ..	1,129	189,992	170
1945-46 ..	1,113	282,502	253
1946-47 ..	498	77,376	155
1947-48 ..	1,554	208,678	134
Mean ..	1,985	271,097	137 (Weighted)

The comparatively low yield was due to unusually dry conditions which prevailed through most of the growing season.

Attacks of the cotton leaf worm and pink boll worm were slight only.

The Department continued to exercise close supervision over all handling and ginning operations.

The entire crop of certified clean lint was sold to the Raw Cotton Commission. Guaranteed prices varied from 66 cents per lb. f.o.b. for Grade 1 to 62 cents for Grade 3 and below. The price obtained for the whole crop of clean lint was \$130,301.72 — an average price per lb. of approximately 62½ cents.

Guaranteed prices for the 1948—49 crop varied from 84 cents for Grade 1 to 75 cents for grade 4 and below. The fact that Government was in a position to announce an increased first payment (16c.) for the 1948—49 crop of seed cotton well in advance of the planting season resulted in a greatly increased acreage being planted. The final estimate being 3,550 acres.

Weather conditions up to the end of the year were favourable but there were early and severe attacks of the cotton leaf worm. Spraying with lead arsenate was, as usual, thoroughly done by estates and this year peasants paid more attention to this than formerly. Although at one time these attacks threatened disastrous results they were effectively checked, or petered out, and a bumper crop in 1949 is expected.

ST. KITTS—NEVIS

ST. KITTS

The acreage under cotton in St. Kitts in 1948 was the smallest for the past ten years and was smaller than the acreage which was planted in 1944 when a very severe drought in March and April prevented the planting of more than 342 acres. In St. Kitts cotton is grown on the estates as a catch crop with sugar cane and is planted from 1st March to 15th April. For the 1948 crop seed for planting about 1,200 acres had been prepared. Unfortunately owing to labour troubles there was a very late start with the harvesting of the cane crop and the estates were unable to plant more than 330 acres, some of which was planted towards the end of May. The late planted cotton gave a very poor return and very little clean cotton was harvested from these fields as they were severely damaged by pink boll worm from the earlier planted fields. The crop was slightly attacked by the leaf worm (*Alabama argillacea*). The total production of lint was 73,434 lb. as against 194,038 lb. for the previous crop. Clean lint amounted to 60,130 lb.—yield of 180 lb. per acre. The clean lint was sold to the Raw Cotton Commission at prices ranging from 78 cents per lb. f.o.b. for Grade 1 down to 74 cents per lb. for Grade III and below. At the end of the year the crop had not been shipped, so that the average price realised is not yet known.

NEVIS

In Nevis the planting season for the 1947-48 crop was 16th September to the 31st October, 1947. Approximately 1,668 acres were planted by 1,954 growers as against 1,319 acres in 1946-47 by 1,286 growers. Production was 193,445 lb. clean and 53,347 lb. stained lint as against 82,063 lb. clean and 19,161 lb. stained lint for the previous crop. The yield of lint per acre was 116 lb. clean and 32 lb. stained lint as against 65 lb. and 14 lb. respectively in 1946-47. Pink boll worm again caused severe damage.

The Marketing Department purchased 558,851 lb. clean seed cotton and 96,553 lb. stained seed cotton. The total payment for clean seed cotton was 20½ cents per lb., paid in three instalments, and for stained seed cotton 10 cents per lb., paid in two instalments. The whole crop was ginned at the Government Ginnery from 3rd March to 17th June.

The clean lint was sold to the Raw Cotton Commission at prices from 71 cents per lb. for Grade I to 67 cents for Grade III and below, f.o.b. Nevis. Only 10 per cent of the bales shipped were placed in Grade I and the average price obtained for the crop was 67.9 cents per lb. clean lint. 6,548 lb. stained lint was sold to a local buyer in St. Kitts at 36 cents per lb. at warehouse in Nevis and 27,094 lb. to the Raw Cotton Commission at 30 cents per lb. f.o.b. Nevis. Somewhat over 124 tons of prime seed were sold to Spooners Cotton Factory, St. Kitts, at \$35.00 per ton at pier in Nevis.

The planting season of the 1948-49 crop was 1st September to 15th October, 1948. In October and November the crop looked exceedingly promising but the heavy and continuous rains of December resulted in the development of plants with a very vegetative growth and ripening of bolls was delayed. There were signs of early infestation by the pink boll worm.

ANGUILLA

In Anguilla the planting season of the 1947-48 crop was 16th August to 30th September, 1947. Production amounted to 2,434 lb. clean and 174 lb. stained lint as against 1,838 lb. clean lint for the previous season. Messrs. Rey & Co.'s ginnery bought the peasants' seed cotton and the clean lint was sold to the Raw Cotton Commission at 74 cents per lb. f.o.b. St. Kitts.

The 1948-49 crop was planted in August-September, 1948, and at the end of the year there was promise of a better crop than that of the previous season.

Statistics of cotton production in the presidency are given in Tables VII, VIII, IX, X and XI.

TABLE VII
COTTON PRODUCTION 1947-48 IN ST. KITTS-NEVIS

Island	Acreage	Clean Lint	Stained Lint	Total Lint	Yield per acre	
					lb	
	acres	lb	lb	lb	Clean	Stain
St. Kitts	333	60,130	13,304	73,434	180	40
Nevis	1,668	193,445	53,347	246,792	116	32
Anguilla	60	2,434	174	2,608	40	3
TOTAL..	2,061	256,009	66,825	322,834		

TABLE VIII.
COTTON ACREAGE: ST. KITTS-NEVIS

Year.	Area planted in Sea Island Cotton			
	Acres			
	St. Kitts.	Nevis.	Anguilla.	Total.
1938-39 ..	1,300	2,850	400	4,550
1939-40 ..	1,709	3,000	300	5,009
1940-41 ..	1,400	4,000	150	5,550
1941-42 ..	1,530	4,500	225	6,255
1942-43 ..	1,100	2,573	200	3,873
1943-44 ..	342	2,544	70	2,956
1944-45 ..	1,032	2,680	70	3,782
1945-46 ..	860	1,688	60	2,608
1946-47 ..	956	1,319	30	2,305
1947-48 ..	333	1,668	60	2,061
Mean ..	1,056	2,682	157	3,895

TABLE IX.

TOTAL PRODUCTION AND YIELD OF COTTON LINT: ST. KITTS—NEVIS

Year.	Total Lint production lbs.				Yield of Lint per acre lbs.		
	St. Kitts.	Nevis.	Anguilla.	Total.	St. Kitts	Nevis.	Anguilla.
1938-39 ..	227,478	252,936	29,368	509,782	175	88	73
1939-40 ..	507,896	482,854	7,798	998,548	297	161	26
1940-41 ..	282,774	558,371	18,974	860,119	202	140	126
1941-42 ..	188,173	610,825	30,557	829,555	123	136	136
1942-43 ..	223,150	200,148	17,224	440,522	203	80	86
1943-44 ..	59,439	302,982	4,503	366,924	174	119	64
1944-45 ..	257,831	314,818	4,611	577,260	250	117	66
1945-46 ..	158,716	205,045	4,222	367,983	185	121	70
1946-47 ..	194,038	101,224	1,972	297,234	203	77	66
1947-48 ..	73,434	246,792	2,608	322,834	223	148	43
Means ..	217,293	327,600	12,184	557,077	204	119	76

TABLE X.

PRODUCTION AND YIELD OF CLEAN LINT: ST. KITTS—NEVIS

YEAR	Production of Clean Lint in lbs.				Yield per acre of Clean Lint in lbs.		
	St. Kitts	Nevis	Anguilla	Total	St. Kitts	Nevis	Anguilla
1938-39 ..	209,653	238,422	27,604	475,679	161	84	69
1939-40 ..	436,858	465,053	6,987	908,898	256	155	23
1940-41 ..	239,486	518,242	17,931	775,669	171	130	119
1941-42 ..	139,862	579,148	29,357	748,367	92	129	130
1942-43 ..	169,015	186,081	16,024	371,120	154	72	80
1943-44 ..	47,560	287,892	4,343	339,795	139	113	62
1944-45 ..	226,227	296,685	4,385	527,297	219	111	63
1945-46 ..	147,195	196,328	4,040	347,563	171	116	67
1946-47 ..	171,755	82,063	1,838	255,656	180	65	61
1947-48 ..	60,130	193,445	2,434	256,009	180	116	40
Means ..	184,775	304,336	11,494	500,605	175	113	73

TABLE XI

COTTON—EXPORTS AND VALUES: ST. KITTS—NEVIS

Year	Cotton Lint		Cotton Seed		Cotton Seed Meal		Cotton Seed Oil		Cotton Lint (Clean) f.o.b. per lb.
	Exports	Value	Exports	Value	Exports	Value	Exports	Value	
	lb.	£	tons	£	tons	£	gals.	£	
1939 ..	589,464	37,173	28	82	31	117	..	..	
1940 ..	906,385	87,808	50	225	..	..	990	107	22½—23½d
1941 ..	869,476	70,202	84	394	31	183	1,290	193	..
1942 ..	805,704	72,293	..	..	11	67	2,481	453	..
1943 ..	287,611	25,424	..	..	14	80	559	122	22½—24d.
1944 ..	492,316	47,564	..	..	13	96	665	168	..
1945 ..	593,657	58,347	..	..	195	616	940	284	..
1946 ..	269,477	17,113	2	75	6	47	2,624	779	19—24d.
1947 ..	462,015	48,240	..	..	10	35	124	27	27—28d.
1948 ..	246,468	30,801	..	..	12	133	135	51	34—39d.

MONTSERRAT

The island's production of clean lint amounted to 633,708 lbs. and of stained lint 57,181 lbs. from an acreage of 3,447 acres, an average yield of 184 lbs. clean lint and 16 lbs. stained lint per acre. Production and yields in recent years are shown in Table XII.

TABLE XII.
COTTON PRODUCTION IN MONTSERRAT

Season	Acreage planted	Clean Lint lbs.	Stains lbs.	Total lbs.	Clean Lint per acre lbs.
1941 ..	5,395	1,128,724	47,208	1,175,932	209
1942 ..	4,467	579,190	55,989	635,179	130
1943 ..	4,005	611,752	32,231	643,983	153
1944 ..	3,074	569,534	32,805	602,339	185
1945 ..	3,770	514,349	37,168	551,517	136
1946 ..	2,521	347,977	16,828	364,805	138
1947 ..	2,659	253,008	30,500	283,508	95
1948 ..	3,447	633,708	57,181	690,889	184
Means ..	3,667	579,780	38,739	618,519	169 (Weighted)

The increased price of 60 cents per lb. paid for cotton in 1947 aroused new interest in cotton growing, interest which was maintained when a price of 78 cents per lb. of Grade One cotton was agreed to in January for the 1948 crop. The prospect of an assured market and better prices seem to be sufficient reason to account for the increased acreage. Table XIII shows the relative areas planted under various systems of tenure or cropping in 1948 and in recent years.

TABLE XIII

Season	Peasants rented or freehold land	Share Cropping	Estate culti- vation	Total
	acres	acres	acres	acres
1941 ..	2,340	1,790	1,265	5,395
1942 ..	1,879	1,409	1,179	4,467
1943 ..	1,673	1,297	1,035	4,005
1944 ..	1,152	920	1,002	3,074
1945 ..	1,726	982	1,062	3,770
1946 ..	1,075	637	809	2,521
1947 ..	1,137	628	894	2,659
1948 ..	1,601	865	981	3,447

The planting season opened on the 11th March about two days after ample rains had fallen in practically all districts of the island. Establishment of the crop was more uniform than usual. In windward and northern districts the weather was rather dry during the last ten days of March and the whole of April. The planting season was closed on the 15th May. Weather was generally favourable for the rest of the cotton season. Aphis attack during the earlier stages of growth was more severe than is normal, and there were some heavy attacks of cotton leaf worm in a few comparatively small areas. The close season began on the 1st December. The yield of 200 lbs. lint, including stained lint, per acre, for the island was above the average.

At the request of the Montserrat Cotton Growers Association the Agricultural Department organized and brought into effect a system of seed cotton inspection, which appears to have made a very useful contribution towards the maintenance of quality standards in the lint.

The whole crop of clean lint was sold to the Raw Cotton Commission, who graded it in England. The Raw Cotton Commission paid the following prices:—

Grade	1	2X	2	3X	3 and below
Price	78	77	76	75	74 cents per lb. f.o.b.

The price paid locally for clean seed cotton was 19 cents per lb.

VIRGIN ISLANDS

There was a slight revival of interest in cotton, but only a few acres were sown. It promises well.

GENERAL

Mr. I. M. L. Oliver, the representative of the British Cotton Growing Corporation on the Advisory Committee in England of the West Indian Sea Island Cotton Association, paid a visit to all the main cotton growing islands early in the year. He came as a representative of the spinners and also of the Raw Cotton Commission to discuss with growers on the spot the numerous problems surrounding the production and marketing of Sea Island Cotton. His visit resulted in the interchange of much useful information. Perhaps the most important result to date of his visit, from the point of view of the cotton grower, is that the Raw Cotton Commission has adopted the practice of making an offer for the forthcoming crop before the crop is planted, so that growers can plan their operations with a good deal more confidence than ever before.

5. LIME PRODUCTS

MONTSERRAT

Exports of limes and lime products for 1948 and the previous four years are set out in Table XIV together with annual totals expressed in terms of barrels of fruit. In calculating these annual totals $7\frac{1}{2}$ gallons of raw lime juice were taken to represent one barrel of lime fruits, and 1 lb. distilled lime oil is taken to represent three barrels of lime fruits. No conversion was made in respect of ecuelled oil as this product is usually obtained from limes which are afterwards crushed for juice production.

TABLE XIV
LIME PRODUCTS: MONTSERRAT

Year	Green Limes	Raw Lime Juice	Ecuelled Oil	Distilled Oil	Total calculated as Limes
	barrels	gallons	lbs.	lbs.	barrels
1944 ..	15	49,548	814	555	8,286
1945 ..	3	36,572	593	299	5,776
1946 ..	16	24,122	601	487	4,693
1947 ..	13	55,620	304	114	7,771
1948 ..	25	25,992	667	144	3,923

Some 20,000 gallons of raw lime juice were awaiting shipment at the close of the year 1948.

VIRGIN ISLANDS

As usual, a small quantity of fresh limes were exported to St. Thomas.

6. TOMATOES

MONTSERRAT

The tomato export trade to Canada was revived after having been in abeyance since 1942 on account of lack of refrigerated shipping space, and several small shipments were made by the Government Marketing Depot and one private shipper during the season, February to May, 1948. Importations of tomatoes into Canada were prohibited from most countries except the West Indies at that period. Steamer callings at Montserrat were less frequent than was desirable, but the lack of competition on the Canadian market helped to produce prices which were generally considered satisfactory. A private ship-

per sent tomatoes to Bermuda, and there were considerable shipments to Barbados and the nearby West Indian islands. Tomato shipments for the year are set out by destination in Table XV.

TABLE XV

To Canada	65,070 lbs.
" Bermuda	31,730 "
" other West Indian islands ..	100,622 "
	197,422 "

7.

COCONUTS

An attempt to resuscitate the copra industry in Nevis met with some success and a small shipment of sun-dried copra was made to Barbados from Pinney's estate. Nevis also shipped about 40,000 whole nuts; another 55,000 were exported from the Virgin Islands.

8.

FOOD PRODUCTION

ANTIGUA

Drought hampered the production of food in the first half of the year and there were many crop failures. The position improved after September and by the end of the year the acreage under food crops was very much larger than in 1947 when 1,200 acres were estimated to be under food crops of various kinds. No detailed estimate was possible this year because the field staff were fully occupied in supervising the special work provided by Government to relieve unemployment, which was higher than usual owing to the short sugar cane crop.

From October 28th to December 22nd expenditure on this work amounted to \$47,292.45. The highest expenditures were in the districts centreing around Comfort Hall and Rooms (\$7,207.32), Belvidere and Greencastle (\$7,024.17), Piccadilly (\$6,675.16) and Southern Settlements (\$5,845.65).

Work done and numbers employed were as follows:—

Average number of workers employed per week ..	912
Area cleared and stumped	971 acres
" cleared only	420 "
" stumped only	153 "
" bunded on the contour	580½ "
" banked, mostly on the contour	459½ "
Old drains re-opened	1,142 lines*
New drains opened	2,542 "

* (1 line = 100 feet)

By the end of the year many of the areas dealt with were already growing crops and will make a useful contribution to the island's production.

ST. KITTS-NEVIS

The efforts of the Department to maintain and increase, if possible, the production of local food crops were continued during the year.

In St. Kitts, the cultivation of food crops on the sugar cane lands was greatly handicapped by the late start with the harvest of the cane crop. On the 1st December, 1947, notices were issued by the Agricultural Superintendent, under the provisions of the Vegetable Production (Defence) Control Order, 1942, to the estate for planting and cultivation of vegetables to the extent of 20 per cent of the total acreage under sugar cane. Estates were required to plant during 1948, 560 acres of yams, 1,120 acres of Indian corn, 841 acres of sweet potatoes and cassava and 281 acres of peas and beans. Notices were issued monthly to individual estates for the planting of sweet potatoes. Only a very small percentage of the acreage allocated for yams was planted as there was a considerable shortage of yam seed owing to the drought during the previous year and also owing to the fact that a large portion of yams which had been reserved for planting was used for food during the strike. The late harvesting of the cane crop was responsible for the small acreage of corn which was planted by the estates. During the last quarter of the year fairly large supplies of sweet potatoes became available from plantings on

the sugar cane lands of estates. Several estates planted small areas of tomatoes, onions and cabbages. Pigeon peas and blackeye peas were plentiful at the end of the year.

During the strike labourers cultivated considerable areas of the upper lands of estates in ground provisions and a much larger acreage of these lands was planted in food crops than for many years past.

In Nevis, as a result of the drought, there was a serious shortage of locally grown food crops during the first half of the year. However, with the rains during the second half of the year there was considerable planting of ground provisions, indian corn, peas and beans and local food crops were plentiful during the latter part of the year.

In Anguilla the first six months of the year were very dry and, with the exception of guinea corn and pigeon peas, food crops failed. In the later months of the year guinea corn, pigeon peas and sweet potatoes were plentiful and there were fair supplies of green vegetables.

MONTSEERRAT

Some estates cultivated comparatively small areas of food crops and peanuts produced fair quantities. After the needs of country districts had been supplied, and a proportion of production exported, the surplus offered for sale in Plymouth market was usually about equal to the demands of the town dwellers. Fair quantities of yams, carrots, cabbages, pigeon peas and white beans were available in season in this market, and sweet potatoes and pumpkins were generally on offer, but there was sometimes keen competition for plantains, bananas, tannias and dasheens. There appears to have been some increase in the amount of locally produced corn meal available in Plymouth. Such imported foods as flour and rice were generally available.

The year was fairly favourable for vegetable production. The figures of exports are set out in Table XVI. Nearly half of the carrots were sent to Trinidad, a large proportion of the exports of vegetables of all kinds went to Antigua, and some vegetables were sent to various destinations in the West Indies.

TABLE XVI.

EXPORTS OF VEGETABLES FROM MONTSEERRAT, 1948

	lbs.
Carrots	122,829
Sweet potatoes	162,794
Shallots	10,850
Onions	7,419
Turnips	704
Beets	745
Cabbages	20,151
Mangoes	23,977
Pulses	1,156
Corn	26,894
Breadfruit	60,387
Unclassified fruit and vegetables ..	35,615

VIRGIN ISLANDS

With the fairly evenly distributed rainfall, ground provisions and vegetables were more plentiful than for some years past.

9.

LIVESTOCK

ANTIGUA

No epidemic disease was reported during 1948 and the general health of the island's livestock appeared satisfactory. In spite of the severe and prolonged drought few animals were lost although their condition fell off very considerably in most cases.

The four Government dipping tanks already constructed were maintained and serviced during the year, but owing to the need for economy plans for the construction of an additional one had to be postponed.

As from May 1st the Department was without the services of a full-time Veterinary Officer. Veterinary attention was given, when required, by Dr. A. Raeburn, a Veterinarian in private practice.

Public interest in animal husbandry continued to increase. The Antigua Agricultural and Commercial Society organised a Pasture Improvement competition which attracted many entries.

The sale of livestock is an important item in the economy of the island of Barbuda, which shipped 38 cattle, 313 goats, 140 sheep, 32 equines and 3 pigs, valued in all at over \$5,000, mainly to Antigua.

ST. KITTS-NEVIS

In St. Kitts mechanization on the estates increases year by year and the livestock population of the island has been reduced greatly in recent years. It has been suggested that a small number of dairy cows might profitably be kept on each estate but it is doubtful whether there will be any serious development along these lines, until a better class of dairy cow is more easily come by than at present.

In Nevis the breeding of livestock is carried on by peasants on a moderate scale and the bulk of the meat supply of St. Kitts comes from that island. The possibility of organizing a trade in beef cattle with Trinidad is under consideration.

In February, Anthrax made its appearance in Nevis; the island was proclaimed an infected area and an inoculation campaign was conducted by the Veterinary Officer. The proclamation was revoked on the 27th July after several months in which no new cases occurred. The death rate among cattle and sheep was high and the economy of the island was seriously affected. There was a shortage of meat supplies in both St. Kitts and Nevis and the prohibition of export of animals and poultry from Nevis during the quarantine cut off an important source of income to the peasant.

One district in St. Kitts was quarantined from the 25th September to the 17th November owing to the appearance of one case of Anthrax. No further cases were reported.

The following animals were exported during the year:—

Mules	44
Horses	7
Donkeys	7
Swine	1

MONTserrat

Most of the livestock of the island is owned by peasants. One estate has a herd of working oxen. Home-produced supplies of meat, while still not plentiful, seem to have been somewhat better during the year. Supplies of milk, poultry and eggs remained inadequate.

The death of a horse at the end of March was, at the time, suspected to have been caused by anthrax, and emergency legislation regarding the slaughter and movement of animals was in force throughout the month of April. As there were no further cases it is assumed that anthrax did not occur. There were no serious outbreaks of disease among livestock.

In spite of a reasonably well distributed rainfall there was often a shortage of good fodder. With rare exceptions little is done by stock keepers to improve the supply.

The control by the Agricultural Department of the slaughter of female stock for meat, and the registration with the Police or Municipal Authorities of all slaughterings for meat continued. These controls have for their object the maintenance of the supply of breeding stock; they also help to check the theft of small stock. The export of meat animals was closely restricted.

The following figures set out the livestock exports for the year. Most of the equines went to Dominica.

Horses	1
Donkeys	15
Pigs	2
Rabbits	2
Poultry	24

VIRGIN ISLANDS

The general health of livestock was good and good grazing was more regularly available than in most years, mainly owing to better weather. There has been an increase, although not great, in the amount of land being put under grass. This improvement seems to be confined mainly to the Western and East

ern ends of Tortola. It would appear that the class for pastures in the Annual Agricultural Shows does encourage peasants to take greater care of their pastures.

A certain amount of land has also been planted under Elephant Grass as this grass showed its ability to withstand drought during a very dry period in 1947.

The usual fortnightly shipments of livestock to St. Thomas, American Virgin Islands, continued and the prices per lb. liveweight received (Cattle 10½c.—12c., sheep and goats 14c., swine 17c.—19c. all U.S.C.) were satisfactory.

Two small shipments of cattle were made to St. Martin, French West Indies. Comparative statistics are given in Table XVII.

TABLE XVII
EXPORTS OF LIVESTOCK FROM THE VIRGIN ISLANDS

Year	Cattle	Sheep	Goats	Swine	Equines	Poultry	Value
							\$
1944 ..	1,136	523	1,636	498	1	2,713	91,680
1945 ..	1,147	394	1,714	453	1	3,186	95,356
1946 ..	1,178	367	1,682	364	45	3,218	104,923
1947 ..	1,053	341	1,998	416	2	1,829	99,812
1948 ..	957	463	2,259	784	3	1,573	103,702

10. STATISTICS OF EXPORTS AND IMPORTS

Comparative statistics of the principal exports and of certain imports during recent years are given in Tables XVIII to XXII.

TABLE XVIII.
PRINCIPAL EXPORTS FROM ANTIGUA

COMMODITY	1938		1946		1947		1948	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
		£		£		£		£
Sugar (tons)	20,844	194,470	24,020	445,324	17,848	416,646	12,622	323,895
Molasses (gals.) ..	1,054,087	11,521	477,850	7,990	362,387	7,680	634,590	17,220
Rum (gals.)	9,449	1,152	30,317	7,232	39,143	9,651	49,352	13,873
Cotton Lint (bales of 400 lb.)	437	11,910	706	19,668	210	9,274	553	30,168
Cotton Seed, Cotton Seed Oil & Meal ..	—	313	—	1,640	—	297	—	497
Limes and lime products	—	657	—	403	—	450	—	—
Tomatoes (crates of 20 lb.)	5,493	639	280	125	281	164	291	137
Coconut Products ..	—	86	—	—	—	47	—	11
Livestock	—	300	—	676	—	147	—	240
Hides and Skins ..	—	207	—	499	—	513	—	765
Other agricultural products*	—	650	—	2,585	—	1,726	—	1,234
Total		221,905		486,142		446,595		388,040

* Includes forest products, fruit, vegetables and ground provisions.

TABLE XIX

PRINCIPAL EXPORTS FROM ST. KITTS-NEVIS

COMMODITY	1938		1946		1947		1948	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
		£		£		£		£
Sugar (tons) ..	26,481	204,835	30,739	599,485	31,631	756,560	30,448	829,353
Molasses (gals.) ..	600,828	8,770	679,820	15,576	574,786	13,490	947,255	21,348
Tomatoes (crates of 20 lb.)	2,921	445	—	—	—	—	—	—
Cotton Lint (bales of 400 lb.)	1,824	45,193	674	17,113	1,155	48,240	616	30,801
Cotton seed, meal, cake and oil ..	—	1,204	—	901	—	62	—	184
Coconuts and coconut products ..	—	349	—	622	—	446	—	453
Livestock ..	—	1,309	—	2,988	—	4,557	—	1,404
Hides & Skins ..	—	230	—	1,320	—	1,797	—	1,231
Salt (brls. of 300 lb.)	26,947	3,240	40,442	14,144	54,645	21,441	32,936	12,633
Other agricultural products*	—	430	—	551	—	556	—	474
Total ..		266,005		652,700		847,149		897,881

* Includes forest products, fruit, vegetables and ground provisions.

TABLE XX.

PRINCIPAL EXPORTS FROM MONTSERRAT

COMMODITY	1938		1946		1947		1948	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
		£		£		£		£
Cotton Lint (bales of 400 lb.) ..	1,081	25,689	334	12,863	924	39,696	1,572	93,750
Cotton Seed & Cotton Seed Products ..	—	937	—	291	—	208	—	499
Lime and Lime Products ..	—	4,081	—	3,323	—	7,706	—	4,991
Tomatoes (crates of 20 lb.) ..	35,001	5,568	1,188	221	292	87	9,800	4,083
Livestock ..	—	431	—	273	—	37	—	36
Hides & Skins ..	—	235	—	187	—	299	—	94
Other agricultural products*	—	1,420	—	2,533	—	1,933	—	3,181
Total ..		38,361		19,691		49,966		106,634

* Includes forest products, fruit, vegetables and ground provisions.

TABLE XXI.

PRINCIPAL EXPORTS FROM THE BRITISH VIRGIN ISLANDS

COMMODITY	1938		1946		1947		1948	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
		£		£		£		£
Limes ..	—	33	—	54	—	37	—	99
Tomatoes ..	—	13	—	21	—	20	—	4
Coconuts ..	—	188	—	520	—	503	—	760
Livestock ..	—	5,897	—	21,859	—	20,813	—	21,605
Rum (gals.) ..	—	—	228	74	4	2	90	29
Other agricultural products*	—	2,985	—	5,948	—	6,117	—	7,970
Fish ..	—	401	—	2,991	—	2,048	—	1,890
Total ..		9,517	—	31,467	—	29,540	—	32,357

* Includes forest products, fruit, vegetables and ground provisions.

TABLE XXII

VALUE OF IMPORTS OF CERTAIN COMMODITIES INTO THE LEEWARD ISLANDS

in hundreds of pounds sterling (£00)

FOODSTUFFS FOR HUMAN CONSUMPTION	ANTIGUA				ST. KITTS-NEVIS				MONTSERRAT				VIRGIN ISLANDS				TOTAL			
	1938	1946	1947	1948	1938	1946	1947	1948	1938	1946	1947	1948	1938	1946	1947	1948	1938	1946	1947	1948
Wheaten Flour ..	198	761	961	1,236	270	871	1,211	1,343	67	274	396	356	27	76	114	115	562	1,982	2,682	3,050
Pulses	3	2	5	15	4	3	16	51	..	1	..	1	1	3	2	1	8	9	23	68
Rice	93	264	281	190	113	190	227	169	9	18	35	19	2	6	4	5	217	478	547	383
Cornmeal (maize) ..	103	88	349	479	58	101	164	157	3	2	4	1	3	5	11	10	167	196	528	647
Bread & Biscuits ..	29	19	50	57	22	38	37	38	3	10	8	13	1	4	4	4	55	71	99	112
Butter & Substitutes ..	52	161	148	153	78	182	171	127	9	20	17	18	3	5	6	7	142	368	342	305
Lard & Substitutes ..	28	68	83	78	56	97	109	99	4	8	6	6	3	8	9	12	91	181	207	195
Edible Oils	38	191	224	31	10	44	72	9	5	4	3	1	..	5	2	1	53	244	301	42
Preserved Milk ..	2	16	32	52	2	20	46	68	..	2	4	4	..	6	3	3	4	44	85	127
Cheese	8	15	49	49	11	33	86	52	2	2	5	3	1	2	5	8	22	52	145	109
Preserved Meat ..	55	201	209	229	63	125	141	252	7	21	20	35	3	8	5	5	128	355	375	524
Preserved Fish ..	90	251	470	312	66	154	229	264	33	39	55	52	1	1	1	3	190	445	755	631
Fruit & Vegetables ..	32	143	201	143	24	45	97	83	7	4	8	3	1	8	6	6	64	200	312	235
Coffee	2	8	15	18	6	14	17	20	..	1	2	4	1	2	2	2	9	25	36	44
Cocoa	6	15	16	27	9	20	35	31	1	2	2	5	..	1	1	1	13	38	54	65
Tea	6	9	14	9	6	10	15	14	1	1	2	5	..	1	1	1	21	21	32	29
Sugar	25	7	15	229	43	52	65	123	56	118	147	162	13	73	51	53	137	250	278	567
TOTAL ..	770	219	122	3,307	841	1,999	2,738	2,900	207	527	714	688	60	214	227	238	1,878	4,959	6,801	7,133
Animal Feeding Stuff ..	19	22	41	48	39	38	50	46	1	1	3	2	..	..	1	..	59	61	95	96
Fertilisers	45	149	202	122	185	351	207	500	1	..	2	1	..	..	..	..	231	500	411	623
Fertilisers Volume in tons	452	972	662	574	2,665	2,106	1,245	2,678	..	1	54	6	..	..	..	..	3,137	3,079	1,961	3,258

RAINFALL IN ANTIGUA—1948

48 STATIONS

No.	Station	Jan.	Feb.	Mar.	Apr.	May	Jun.	July	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1.	Antigua Sugar Factory	2.41	1.85	1.86	1.43	3.35	3.69	1.46	2.92	8.24	11.84	4.18	5.64	48.87
2.	Betty's Hope	1.64	.36	1.00	.79	1.74	2.86	1.62	1.70	3.34	5.13	4.44	3.77	28.39
3.	Blackman's	1.18	.51	1.13	.39	1.67	2.98	1.29	1.86	6.68	7.68	4.63	4.57	34.57
4.	Blakes	1.80	.49	2.23	1.48	2.37	2.26	2.75	2.17	2.76	4.87	5.26	3.61	32.05
5.	Blubber Valley	4.61	.92	1.68	.81	3.52	2.20	2.95	2.88	3.68	6.82	6.94	3.49	40.50
6.	Burkes	2.32	1.53	1.79	1.39	2.30	2.13	2.04	2.05	4.39	5.01	6.99	3.67	35.61
7.	Cassada Gardens	2.05	1.10	1.59	.27	2.76	3.68	.91	2.49	4.46	5.82	5.14	3.48	33.75
8.	Cedar Valley	1.99	1.37	2.32	.28	2.28	2.01	.57	2.72	2.90	4.99	5.29	2.97	29.69
9.	Clare Hall	.85	1.70	.00	.00	2.57	3.40	1.65	2.40	4.96	4.96	5.07	1.75	30.01
10.	The Cotton	1.61	.67	.82	.83	1.87	3.05	.97	2.84	5.38	7.62	4.20	2.74	32.86
11.	Comfort Hall	1.35	.35	.95	.80	1.52	2.69	.81	1.84	5.33	6.97	4.74	3.71	31.11
12.	Collins	3.93	1.04	1.59	.65	1.42	3.23	1.85	1.95	5.22	10.04	5.09	3.53	30.23
13.	Creekside	1.92	1.16	1.83	1.22	3.19	2.15	2.87	2.11	4.83	5.40	6.01	4.76	43.58
14.	Delaps	1.68	.59	1.83	1.09	2.09	2.71	2.87	1.67	3.36	5.21	5.21	4.17	32.79
15.	Donavans	2.75	1.23	.99	.95	2.06	2.15	1.08	1.67	5.59	6.88	3.56	3.11	33.31
16.	Duers	1.78	.64	1.02	1.14	2.35	3.17	1.42	2.21	5.25	6.91	6.46	4.92	38.21
17.	The Dockyard	1.87	.00	1.46	1.18	2.51	1.86	2.10	2.27	4.77	8.26	5.43	2.95	34.13
18.	Five Islands	2.08	1.01	2.10	1.26	3.29	5.95	1.62	2.09	3.41	6.65	3.44	4.02	36.13
19.	Fitches Creek	2.32	1.84	2.23	.44	2.56	3.37	1.25	3.98	8.37	9.84	5.19	6.08	46.52
20.	Ffryes	2.82	1.57	1.89	.87	3.31	2.38	2.87	2.68	3.07	4.56	4.90	3.29	34.32
21.	Friar's Hill	1.39	.42	.61	.59	2.80	3.38	1.37	2.29	3.79	8.69	3.08	3.42	34.69
22.	Gaynors	1.52	.76	.64	1.06	2.13	2.57	.96	2.20	3.12	6.09	6.25	3.18	29.98
23.	Gilberts	4.37	1.35	1.70	1.01	2.92	2.74	1.35	2.01	3.39	7.63	4.29	3.54	30.93
24.	Greencastle	4.45	1.83	3.45	.43	2.68	3.69	2.65	2.79	6.89	7.65	7.24	5.50	46.85
25.	Langfords	2.54	.51	1.17	1.00	1.74	2.65	.67	3.01	4.12	5.65	4.79	3.04	37.81
26.	Long Lane	1.24	.47	.35	.82	2.00	2.21	.52	1.40	3.81	5.02	5.34	3.61	32.08
27.	Mercer's Creek	1.83	.90	1.69	1.35	2.68	2.62	3.34	2.86	3.81	8.05	4.37	3.54	28.38
28.	Montpelier	1.65	.47	1.66	.31	2.25	1.91	2.22	1.63	3.19	5.63	4.48	2.80	33.97
29.	Morris Looby's	3.21	1.13	2.32	.42	2.74	3.77	1.33	2.33	3.94	4.43	6.44	3.46	29.18
30.	Cotton Station	4.22	.89	1.76	2.01	3.99	4.08	2.69	2.27	4.14	10.36	6.44	3.46	35.52
31.	New Division	2.32	1.10	.74	.62	2.13	3.01	1.46	1.91	5.40	8.82	5.81	6.10	48.32
32.	North Sound	2.62	.63	.76	1.10	2.14	3.41	1.23	1.91	4.29	6.87	4.16	4.15	35.82
33.	Pares & Cochrane	2.75	.64	.99	1.14	2.35	3.17	1.42	2.21	5.25	6.91	5.40	3.98	34.34
34.	Parrys & Diamond	2.75	.53	1.01	1.05	2.82	3.04	2.50	2.15	5.67	9.55	6.46	4.92	38.21
35.	Parham New Works	2.39	1.17	1.51	.95	1.87	3.08	.90	3.12	5.77	7.36	4.90	5.61	41.58
36.	Parham Lodge	2.62	.89	.80	.54	2.45	2.96	1.01	1.49	5.12	8.37	4.62	3.01	35.55
37.	Parham Hill	2.22	.88	2.16	.52	2.36	3.37	.99	2.82	5.12	7.06	5.24	4.35	35.84
38.	Paynters	2.06	.69	1.47	1.15	3.03	1.73	2.57	2.58	6.97	8.87	4.17	5.62	39.14
39.	Piccadilly	3.18	1.08	1.69	1.49	2.79	4.03	2.41	2.86	5.21	7.98	5.98	2.76	36.16
40.	Sandersons	4.94	1.64	3.45	1.01	5.23	5.92	2.47	2.28	5.02	7.29	7.23	4.95	44.90
41.	St. John's	2.42	.55	2.52	.00	2.33	2.36	.16	1.78	5.11	3.83	7.30	3.65	30.55
42.	Thibous	2.48	.95	.99	1.19	2.41	3.26	1.58	2.17	4.73	8.48	4.37	3.52	36.13
43.	Vernons	2.74	1.06	2.42	1.21	3.39	4.02	6.45	2.26	6.27	5.30	8.07	4.45	47.66
44.	Wallings Dam	3.07	1.06	2.45	1.51	3.04	3.63	6.67	2.53	5.20	6.05	8.20	4.25	47.66
45.	Wallings Station	1.46	.99	1.62	.73	2.08	1.74	2.32	1.48	3.31	6.05	5.73	3.34	30.85
46.	Willis Freemans	2.59	.99	1.48	.62	3.48	5.47	1.02	1.77	3.31	7.50	3.91	3.99	36.13
47.	Yeptons	3.47	.93	1.38	1.08	3.21	2.75	2.94	2.28	3.17	7.00	5.71	3.42	37.34
48.	Yorks													
	Monthly Means 1948	2.44	.93	1.51	.90	2.55	3.08	1.86	2.28	4.64	7.02	5.28	3.92	36.41
	Mean for previous 15 years	2.94	1.45	1.27	2.05	4.05	3.44	3.50	4.39	4.97	5.13	5.98	3.02	42.19

RAINFALL IN ANTIGUA

The average rainfall (annual) for the 60 years previous to 1933 was 43.47 inches.

Means 1933—1948

No. of Stations	Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Total
59	1933	1.98	0.92	1.07	2.62	4.69	2.60	5.28	1.87	8.40	3.04	6.18	9.85	41.50
60	1934	1.56	0.64	2.05	0.61	1.11	3.51	2.81	7.42	3.90	1.62	10.74	5.89	41.86
60	1935	1.33	1.15	0.96	1.96	2.08	3.41	4.36	3.24	4.35	8.70	5.65	2.12	38.31
60	1936	1.65	1.26	0.93	2.84	8.44	3.61	5.92	5.36	10.15	8.14	4.41	7.23	59.94
60	1937	8.54	3.07	0.79	4.39	1.22	1.03	3.86	5.15	4.99	3.47	8.13	2.64	47.28
60	1938	2.07	0.81	1.20	0.51	1.06	11.58	3.10	6.39	3.00	3.95	8.41	2.67	44.75
58	1939	1.64	1.11	1.72	0.25	0.91	1.06	3.00	1.29	1.86	9.42	5.52	1.92	29.70
59	1940	3.41	3.09	2.13	2.41	4.31	2.71	2.15	3.04	3.04	2.41	9.79	1.88	37.37
66	1941	3.10	0.71	1.63	2.10	12.77	3.49	3.02	4.07	5.25	2.95	8.06	2.22	49.37
60	1942	5.61	1.76	0.55	4.43	2.62	4.45	3.39	6.57	2.67	4.53	10.56	2.81	49.95
56	1943	3.99	1.91	1.63	1.01	7.70	5.44	1.96	6.84	3.40	8.69	4.17	2.34	49.08
54	1944	2.09	1.32	0.39	0.55	2.83	3.84	6.46	4.53	4.40	5.69	3.48	1.55	37.13
55	1945	1.40	2.44	1.44	1.59	3.97	2.42	3.38	4.62	6.57	7.59	3.86	3.60	40.99
51	1946	2.12	1.09	1.93	4.53	3.21	1.97	1.32	3.76	5.29	2.32	4.68	4.89	37.11
49	1947	3.62	0.50	0.61	0.94	3.77	1.50	2.57	1.68	7.42	4.46	1.01	0.76	28.84
48	1948	2.44	0.93	1.51	0.90	2.55	3.08	1.86	2.28	4.64	7.02	5.28	3.92	36.41
Monthly Means 1933—1948		2.91	1.38	1.23	1.98	3.96	3.42	3.40	4.26	4.95	5.25	5.94	3.08	41.76

RETURN OF RAINFALL IN ST. KITT'S FOR 1948 (inches)

STATION	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Fahies	7.66	2.50	4.99	17.25	4.03	5.34	4.99	4.30	5.02	5.12	6.43	9.23	76.86
Belle Vue	4.25	1.45	1.91	3.29	2.47	6.48	4.21	6.90	5.75	9.51	7.56	10.58	64.36
Mansion	2.77	1.45	1.36	2.57	3.74	4.47	6.09	5.43	5.66	10.42	6.82	8.91	63.27
Lamberts	6.44	3.05	2.83	4.61	4.29	4.66	5.44	4.88	6.26	2.87	8.31	9.17	62.81
Bourkes	7.06	1.86	1.82	3.99	3.71	5.12	6.07	5.15	7.02	3.31	6.44	9.45	60.80
Willets	3.66	0.75	0.36	4.15	2.57	5.43	6.50	4.71	7.36	5.91	9.38	8.54	59.32
Farm	8.50	1.62	2.13	3.11	3.44	3.72	4.33	2.98	5.88	4.77	5.82	9.50	58.05
Brothersons	3.78	1.36	1.03	3.11	3.14	3.72	4.84	5.75	5.08	4.38	7.77	6.36	58.55
Parsons	3.74	1.67	1.06	2.92	3.52	4.96	6.53	4.87	6.35	5.97	7.49	7.85	56.93
Belmont	3.15	1.63	0.89	6.04	3.11	3.73	6.44	4.75	6.29	4.83	9.16	6.62	56.69
Bayfords	4.29	2.75	1.81	3.36	4.56	3.24	3.51	4.81	6.32	8.49	5.01	6.70	54.85
Lodge	2.46	1.43	1.29	3.16	3.74	3.19	4.40	5.17	5.86	10.40	5.23	8.35	54.68
Cranstouns	5.36	1.03	1.29	10.05	3.29	4.57	3.87	4.70	4.64	3.58	4.94	7.14	54.46
Molineux	2.70	1.55	1.38	3.05	4.34	3.79	5.20	4.44	5.99	8.98	5.02	6.90	53.34
Milliken	3.57	1.96	1.41	3.59	3.37	3.87	5.40	4.03	7.13	5.95	6.67	5.81	52.76
Stapleton	3.45	2.04	1.46	3.00	3.01	2.84	3.09	3.46	6.09	11.42	6.91	5.92	52.75
Con Phipps	4.80	1.49	1.53	3.22	3.16	2.30	5.45	6.67	5.57	2.77	5.21	9.79	51.96
Saddlers	3.54	1.13	1.26	2.72	3.25	3.27	5.59	5.32	4.68	6.15	6.79	8.03	51.73
Wingfield	5.05	2.55	2.51	3.78	5.19	3.24	4.24	4.10	3.77	3.34	6.65	7.35	51.47
Needsmust	3.25	1.38	0.65	2.60	2.40	5.65	4.70	3.20	4.90	8.65	6.30	5.45	49.50
Whites	3.39	1.36	0.82	2.64	3.03	2.84	3.69	4.04	6.75	10.03	3.76	7.13	49.34
Estridge	2.74	1.37	1.35	2.55	2.34	4.51	3.18	4.96	4.95	7.84	6.21	7.11	48.85
Mills	2.36	1.37	1.16	2.35	2.40	3.86	3.78	4.05	4.95	10.45	5.01	7.11	48.85
Shadwell	3.16	1.85	1.17	3.00	2.27	3.63	5.73	3.81	7.54	11.01	5.56	5.38	48.36
Hermitage	1.71	1.06	0.91	2.70	2.57	2.97	3.37	4.55	5.81	11.01	4.74	6.85	48.25
New Guinea	4.73	1.43	1.12	2.75	3.26	3.66	4.32	3.56	5.14	3.04	5.78	9.08	47.87
Canes	3.15	1.07	0.51	3.04	2.79	4.18	4.22	5.24	4.28	6.25	5.73	6.14	46.80
Cunningham	2.84	1.17	0.74	2.35	2.44	2.16	3.29	3.94	4.52	9.75	4.81	6.89	44.88
Canada	2.93	2.48	0.39	1.98	1.84	1.80	2.25	2.71	2.44	12.96	1.26	4.89	43.98
Lr. Bouryeau	2.46	1.04	1.38	2.08	2.37	2.93	3.78	3.32	4.88	8.35	4.01	6.00	42.60
Pond	2.34	1.38	1.15	2.64	1.80	2.70	3.91	3.67	4.57	6.23	6.35	5.96	42.90
Stonefort	4.07	1.71	1.21	2.64	1.44	3.98	5.19	2.73	3.81	4.19	2.41	7.66	41.45
Douglas	3.08	1.66	0.97	2.15	1.94	2.42	3.58	3.07	4.44	6.91	5.39	5.78	41.05
Brighton	1.57	1.07	1.33	2.39	2.53	1.90	2.27	3.77	3.77	8.01	5.19	7.70	40.80
B/terre Factory	2.34	1.33	0.96	2.15	2.28	2.77	3.82	3.22	4.25	6.52	4.70	4.50	39.90
West Farm	2.86	1.65	1.71	2.18	1.77	3.94	3.68	3.76	4.71	3.93	5.63	3.72	39.75
La Guerite	2.62	1.54	1.28	2.37	2.10	3.35	4.70	3.32	5.22	3.90	4.99	3.81	36.34
Buckleys	2.55	1.26	1.18	2.43	2.07	3.83	2.82	2.52	4.99	3.64	4.95	4.42	36.70
Olvees	3.13	1.42	1.47	2.07	2.04	2.09	2.32	2.97	5.20	4.26	4.83	3.49	35.20
Camp	2.40	1.17	1.33	2.00	1.87	3.70	2.81	2.63	5.03	3.89	4.88	3.49	35.20

SECTION II.

Investigational Work of the Departments of Agriculture

11. (1) CENTRAL EXPERIMENT STATION: ANTIGUA

The Central Experiment Station was established at Friar's Hill, Antigua, under Colonial Development and Welfare Scheme No. 465. Work on the site started in 1945 and most of the primary developmental field work was completed in 1947, but progress with the building programme was slower because it was interrupted owing to the necessity to curtail and modify the original scheme to effect economies. Building was resumed in 1948 and all major works have been completed.

Land Usage

By the end of 1948 the land was under utilisation as follows :—

Arable cultivation or fallow	.. ..	185.1	acres
Meadow (unfenced)	.. ..	24.6	"
Paddocks (fenced & fully cleared)	.. ..	132.9	"
Bush partially cleared for paddocking (approximately 32 acres usable for grazing).	.. ..	105.2	"
Undeveloped bush (mostly rocky hilltops)	.. ..	80.8	"
Roads & buildings	.. ..	18.7	"
Allocated to Cotton Experiment Station under the Cotton Officer for the West Indies	.. ..	34.0	"
Allocated to the City Commissioners and the Prison	.. ..	18.0	"
		599.3	"

The arable land actually in crop at the end of 1948 included

Cane Nurseries & experiments	.. ..	28.80	acres
Food crop experiments	.. ..	3.25	"
Food crop seed multiplication	.. ..	31.75	"
Vegetables	.. ..	1.80	"
Fodder crops	.. ..	22.62	"
Cotton seed multiplication	.. ..	57.00	"

Buildings

Seven additional buildings and two concrete cisterns were erected during the year, i.e.

1 Farm Foreman's Cottage	
1 Dairy and Pen	
1 Stockman's House	
1 Store-room	
1 Sheep Pen	
1 Goat Pen	
1 Garage	
2 Cisterns—20,000 gallons (Dairy)	
4,000 " (Foreman's Cottage)	

Water Supplies

Rainfall in 1947 and 1948 was too low for the available storage to be made full use of and the expensive operation of carting water from a pond about 2½ miles away had to be resorted to for about six months of the year.

In October a well was dug at a spot indicated by a water diviner and water was struck at a depth of approximately 28 ft.

Analyses of the water (by titration against Silver Nitrate) gave the following results:—

Date					Parts per million Soluble Chlorides
Oct. 6th, 1948	..	..	..	..	700
" 11th, "	..	..	..	..	1,088
" 15th, "	..	..	..	..	2,212
" 23rd, "	..	..	..	..	2,545
" 27th, "	..	..	..	..	1,958
" 28th, "	..	..	..	..	3,123
" 29th, "	..	..	..	..	2,970
Nov. 4th, "	..	..	..	..	2,222
(Apr. 2nd, 1949	..	..	..	..	1,916)

Although the analysis indicates that this water is marginal in respect of its suitability for regular human consumption it is satisfactory for cattle and horses.

Pumping tests indicate a yield of about 400 gallons per hour, which together with existing arrangements for catching and storing rain water should be sufficient to meet all the water requirements of the Station within the foreseeable future. The well was capped and cased as a preliminary to the erection of a windmill.

Fencing

Owing to the fact that suitable wire was not obtainable paddocking and enclosing could not be completed according to schedule.

Weather Conditions

The drought was even worse than in 1947 until October when conditions improved considerably.

Comparative rainfall figures are as under:—

					1947	1948
January	..	..	..	..	3.97 ins.	2.82 ins.
February	..	..	..	..	.57 "	.57 "
March	..	..	..	..	.59 "	1.89 "
April	..	..	..	..	.67 "	.59 "
May	..	..	..	..	3.34 "	2.80 "
June	..	..	..	..	1.49 "	3.38 "
July	..	..	..	..	2.97 "	1.37 "
August	..	..	..	..	2.50 "	2.29 "
September	..	..	..	..	7.82 "	3.79 "
October	..	..	..	..	4.28 "	8.69 "
November	..	..	..	..	.43 "	3.08 "
December	..	..	..	..	.21 "	3.42 "
					28.84 "	34.69 "

Sugar Cane

Observation plots of new varieties on Fitches, Wetherells and Gunthorpe clays planted in 1946 were reaped and similar plots were laid down for reaping in 1950. Regular observations were made on the plots to be reaped in 1949.

Two permanent manurial experiments on Gunthorpe and Fitches-Wetherell soil respectively were laid down.

Large nurseries of standard and new varieties were maintained and cuttings utilized in the island-wide experiments referred to elsewhere.

Cotton

As an implementation of a recommendation of the Agricultural Policy Committee 1944, the Station is charged with the duties of multiplying pedigree seed from the Breeding Station at Montserrat.

Owing to the drought and the impoverished condition of certain areas total yields from the fifty-seven acres under cultivation were low. From one field, however, a satisfactory return resulted.

Yields from various fields are given hereunder:—

Fields	Acreages	Total Yields	Yield per acre
		(lbs.)	(lbs.)
W1, W2, L17 ..	30.4	14,988	493
L19	16.2	14,024	865.7
L20	6.2	3,331	537
D5	4.1	1,661	405

Treatments aimed at ascertaining the best means of raising yields and the building up of fertility were commenced.

Tomatoes

(a) Observation plots of the standard variety Marglobe and three new varieties from the Canary Islands, Lima, Pelota and Sorpresa, were planted in October. Observations are being conducted and yields recorded on staked and unstaked plants of each variety.

(b) Using the standard variety Marglobe a properly replicated field experiment was planted in October designed to give information re the effect on yields of artificial manures, spacing and staking.

The reaping of the above will not be completed until 1949.

Peanuts

Trials of the Barbuda variety were severely handicapped by drought. When conditions improved vegetative growth was good but the nuts tended to re-germinate rather than dry down satisfactorily.

Indications are that planting should best be done later in the year so that the crop ripens in dry weather.

Trials on more extensive scale are being planned for late 1949.

Pineapples

Owing to the observation recorded by previous workers in Antigua that this crop will not do well on "calcareous soils" trials have been laid down during the year at Greencastle Nursery and Fruit Farm and observations are being made on peasant settlements on the better drained non-calcareous soils. As there must be a time lag of 15-18 months (under favourable conditions) between first planting and fruiting, results from these trials cannot be recorded before 1949 or 1950.

Food Crops

I. Field Trials and Seed Multiplication Plots

Crop	Total Acreages	Total Yield lbs.	Rate per Acre lbs.	Remarks
Maize	14.08	19,103	1,356	Complete loss owing to severe drought
"	28.63	—	—	
Sweet Potatoes	23.26	188,803	8,117	Severely attacked by what appeared to be a "wilt". Later (1949) identified as an almost microscopic mite susceptible to treatment by dusting with flowers of sulphur.
Yams	1.67	11,776	7,051	
Cowpeas	11.20	1,576	131	
Six Weeks Beans	6.02	2,054	341	
Tomatoes	1.18	620	525	
Soya Beans ..	1.00	500	500	

Although owing to the very severe weather conditions total yields were low, these plots served as an invaluable source of planting material at a time of extreme scarcity.

II. Small-scale Trials

An area of just over one acre was intensely cultivated throughout the year. Plantings were made at regular short intervals. Only young seedlings and lettuce were watered artificially as required.

The following table, indicating comparative results at the time of reaping should be read in conjunction with the rainfall figures.

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Cabbage "All Head Early" ..	—	—	—	F	—	—	P	—	—	—	—	—
Cauliflower "Early Patna" ..	—	—	—	—	—	—	—	—	—	—	G	VG
Turnips "White Globe" ..	G	F	—	—	—	—	—	P	—	—	P	P
Shallots—local variety ..	—	—	—	—	—	—	—	VG	—	—	—	—
Beet "Improved Blood" ..	P	VG	—	VG	F	Var.	Var.	F	F	G	—	VG
Radish "Early Long Scarlet" ..	—	P	—	—	—	F	—	—	F	—	—	—
Kohl Rabi "Early Purple Vienna" VP	—	—	—	—	F	—	—	—	—	Var.	—	—
Carrots "Chantenay" ..	Var.	—	—	F	Var.	G	—	—	F	—	—	—
Lettuce "Mignonette" ..	—	—	—	Good results throughout the year								
Onions "Crystal White Wax" ..	—	—	—	—	VG*	—	—	—	—	—	—	—
Cucumber—local variety ..	—	—	—	—	—	—	—	P	—	—	—	—
Sweet Peppers "California Wonder"	—	—	—	—	—	—	—	—	—	—	—	—
Parsley "Paramount" ..	—	—	—	Good throughout the year								

VG = Very good; G = good; F = fair; P = poor; VP = very poor; Var. = varying.

* Although very good bulbs were produced thick necks made a large percentage unsuitable for curing.

III. Food Crop Experiments

(a) Manurial Trial on Yams—Fitches Clay

Planted—27/5/47

Layout—Four Randomised blocks with four treatments and with pen manure half-plots.

Plot size—1/50 acre.

Treatments (per acre)—1. No artificials
2. 2 cwt. sulphate of ammonia
3. 2 cwt. superphosphate
4. 2 cwt. sulphate of ammonia plus 2 cwt. superphosphate

Pen manure (15 tons per acre) applied to half plots.

Potash was applied to one half of each half-plot at the rate of 2 cwt. per acre.

Reaped—23/2/48.

Results—tons per acre of tubers:—

No. N or P	N	P	NP
3.3	3.0	2.9	2.8

No. N or P		N		P		NP	
No P.M.	P.M.	No P.M.	P.M.	No P.M.	P.M.	No P.M.	P.M.
3.5	3.1	3.2	2.8	2.9	3.0	2.5	3.1

No. N or P		N		P		NP	
No K	K	No K	K	No K	K	No K	K
3.1	3.4	3.1	2.9	2.8	3.2	2.8	2.7

Under the conditions of the experiment, there were no consistent gains or losses from the application of any type of manure, either singly or in combination. The yields were exceptionally low owing to adverse weather conditions.

(b) Manurial Experiment on Yams—Gunthorpe Clay

Planted—11/6/47.

Layout—Two 4 x 4 Latin squares with potash half-plots.

Treatments (per acre)—1. No artificials

2. 2 cwt. sulphate of ammonia

3. 2 cwt. superphosphate

4. 2 cwt. sulphate of ammonia plus 2 cwt. superphosphate

Potash to half-plots at 2 cwt. muriate of potash per acre.

Plot size—1/45 acre.

Reaped—25/2/48.

Summary of results—tons per acre:—

No N or P		N		P		NP	
No K	K	No K	K	No K	K	No K	K
3.4	3.2	3.2	3.4	3.2	3.2	3.1	2.5
3.3		3.3		3.2		2.8	

Under the conditions of the experiment, artificial manures either singly or in combination have resulted in no gain in yield. The area, after cultivation was re-planted on 18/5/48 with the same treatments being applied with the exception of potash. To be reaped early in 1949.

(c) Manurial Trial on Maize—Gunthorpe Clay

Planted—5/6/48.

Layout—Two 4 x 4 Latin Squares.

Treatments—1. No artificials

2. 2 cwt. sulphate of ammonia per acre

3. 2 cwt. superphosphate per acre

4. 2 cwt. sulphate of ammonia plus 2 cwt. superphosphate per acre.

Reaped—24/9/48.

Results:—

Lbs.	cob corn	(undried)	per acre
Nil	N	P	NP
951	996	900	911

The whole area was damaged by thieves. Returns were very poor and the response to manures uncertain.

Fodder Crops*Experiments with fodder grasses:*

Of six experiments laid down in 1945-46, two were discontinued. Final results appeared in the Annual Report for 1947.

Results to the end of 1948 of the four experiments which are still being carried on are summarised as follows:—

A. Varietal and Manurial Experiment—

Planted — 23/10/45

Layout — One 4 x 4 Latin Square with manurial half-plots

Spacing — 3 x 2 ft.

Duration of experiment to last reaping—37½ months

Manurial treatment. 2 cwt. Ammonium nitrate (or equivalent in Sulphate of Ammonia) applied to half-plots after planting and after reaping as considered necessary.

Plot size — 1/50 acre.

Grass	No. of times reaped	Yield of fodder in tons per acre		Total amount fertiliser applied *	% loss in yield between 1st and last reaping	
		Nil	N		Nil	N
Elephant ..	10	52.7	62.3	6.3	—83	—64
Guinea ..	9	31.9	41.8	6.3	—64	—46
Guatemala ..	9	41.0	44.6	5.7	—13	+14 (gain)
Uba cane ..	9	27.5	28.3	5.7	—75	—81

* Sulphate of ammonia or equivalent nitrogen as ammonium nitrate (per acre).

B. Manurial Experiment with Guinea Grass.

Planted—11/1/46

Layout—One 4 x 4 Latin Square

Spacing—3 x 2 ft.

Duration of experiment to last reaping—34½ months

Manurial treatments per acre at each application—

1. Nil
2. 2 cwt. Sulphate of Ammonia.
3. 1 cwt. Superphosphate.
4. 2 cwt. Sulphate of Ammonia plus 1 cwt. Superphosphate

Total amounts of manure applied (per acre).

1. Nil.
2. N—20 cwt. Sulphate of Ammonia
3. P—10 cwt. Superphosphate
4. NP—20 cwt. Sulphate of Ammonia plus 10 cwt. Superphosphate

Plot size—1/82 acre.

No. of times reaped	Yields in tons fodder per acre			
	Nil	N	P	NP
11	27.0	43.0	27.0	49.5

As in last year's results, the lack of response to phosphate alone is noticeable. Nitrogen alone has given increase in yield over no manure, and N plus P a still larger increase.

C. Spacing Trial with Elephant Grass—

Planted—19/1/46

Layout—One 4 x 4 Latin Square

- Spacings—
1. 2 x 2 ft.
 2. 2 x 3 ft.
 3. 2 x 4 ft.
 4. 2 ft x continuous planting

Duration of experiment to last reaping—34½ months

Manurial dressings—From one to two cwts. Sulphate of Ammonia was applied per acre after reapings as considered necessary.

Plot size—1/50 acre.

No. of times reaped	Total yield in tons fodder per acre			
	2 x 2	2 x 3	2 x 4	2 x C
11	55.5	56.0	55.5	52.5

D. Spacing Trial with Elephant Grass (2nd trial)

Planted—16/10/46

Layout—One 4 x 4 Latin Square

- Spacings—
1. 4 x 1 ft.
 2. 4 x 2 ft.
 3. 4 x 3 ft.
 4. 4 x 4 ft.

Plot size—1/57 acre.

Duration of experiment to last reaping—25½ months
 Manurial dressings—A total equivalent of 9½ cwt. per acre of Sulphate of Ammonia applied after reapings as considered necessary.

No. of times reaped	Total yield in tons fodder per acre			
	4 x 1	4 x 2	4 x 3	4 x 4
10	75.5	75.5	71.8	68.2

Observation Plots

Observation plots of the following grasses and legumes were maintained:

1. Hay Grass (*Andropogon nodosus*)
2. Para Grass (*Brachiaria mutica*)
3. Barbados Sour Grass (*Andropogon pertusus*)
4. Molasses Grass (*Melinis minutiflora*)
5. Devils Grass (*Cynodon dactylon*)
6. Savannah Grass (*Axonopus compressus*)
7. Kyasuwawa Grass (*Pennisetum pedicellatum*)
8. Blue Pea (*Clitoria ternatea*)

Attempts to extend "*Indigofera endecaphylla*" and "*Indigofera subulata*" on a field scale both as a pure stand and in conjunction with Elephant Grass failed.

Two new introductions were made. Giant Star Grass (*Cynodon plectostachyum*) and African Fox-tail Grass (*Cenchrus ciliaris*). At the end of the year the latter, which had been the earlier introduction, was well established in an open observation plot.

Hay-making

An estimated 40 tons of hay was made from approximately 18 acres of Antigua hay grass (*Andropogon nodosus*) cut about three weeks after commencement of flowering. As in 1947 mechanical trouble prevented cutting at a somewhat earlier stage, as had been planned. The hay was stacked in the open.

Similarly prepared and stored hay made in 1947 kept in excellent condition and readily eaten by cattle and horses.

Livestock

Number and Sex of Animals and Birds maintained (As at 31/12/48).

Cattle:—

Pure bred Red Poll Bull	..	..	1
½ Red Poll x ½ Senegal Bull	..	..	1
¾ " " x ¼ " " calves	..	..	6
½ " " x ½ " " "	..	..	9
½ " " x ½ " " cows	..	..	19
½ " " x ½ " " heifers	..	..	8
¾ " " x ¼ " " heifer calves	..	..	7
½ " " x ½ " " "	..	..	9
Total	..	..	60

Horses:—

Pure bred Stallion (Light Draught French Canadian)	..	1
" " Brood Mare (" " " ")	..	1
" " Colts (" " " ")	..	2
" " Filly (" " " ")	..	1
Native Brood Mares	..	2
Half-bred Fillies	..	3
Total	..	10

Donkeys :—

Pure bred American Jack ..	..	..	1
Half " " " " ..	..	..	1
" " " " Jenny ..	..	..	1
Grade American Jenny ..	..	..	1
Three quarter bred Jacks ..	..	..	2
Half bred Janets ..	..	..	2
Total ..	..	..	8

Sheep :—

Type	Rams	Ewes	Wethers	Ram lambs	Ewe lambs	Total
Native ..	—	3	1	1	2	7
$\frac{1}{2}$ B.H.P. ..	1	14	—	3	1	19
$\frac{3}{4}$ B.H.P. ..	1	6	—	8	8	23
15/16 B.H.P. ..	1	—	—	—	—	1
Total ..	3	23	1	12	11	50

Goats :—

Buck (British Alpine)	..	..	1
Does (Native) ..	..	..	2
Total ..	..	..	3

Poultry :—

Cocks (New Hampshire Reds)	..	..	2
" (White Leghorns)	..	..	2
Pullets (New Hampshire Reds)	..	..	9
" (White Leghorns)	..	..	12
Total ..	..	..	25

Animals Sold during Period*Cattle :—*

<i>Cows</i>	<i>Heifer calves</i>	<i>Bull calves</i>	Total.
2	1	9	12

Sheep :—

<i>Ewes</i>	<i>Ram lambs</i>	<i>Ewe lambs</i>	Total
7	23	22	52

Poultry :—

<i>New Hampshire Reds</i>	<i>White Leghorns</i>			
<i>Cocks</i>	<i>Pullets</i>	<i>Cocks</i>	<i>Pullets</i>	Total
2	31	1	6	40

Cattle

The $\frac{1}{2}$ Red Poll x $\frac{1}{2}$ Senegal herd was maintained in excellent condition.

The young $\frac{3}{4}$ Red Poll x $\frac{1}{4}$ Senegal animals made good progress but lack the bone formation of the half-breeds.

During a visit by the Agricultural Adviser, Mr. Johns, the future breeding policy was laid down. The breeding herd has been more or less evenly divided between two bulls, one pure bred Red Poll and one $\frac{1}{2}$ Red Poll x $\frac{1}{2}$ Senegal, but certain cows were selected to be bred alternatively by the pure and the half-bred bull, the idea being to build up a herd of three-quarter breeds, parallel with a herd of good half-breeds until more information as to the relative merits of the two becomes available.

Two bull calves were shipped during the year; a half-bred to the Agricultural Department, Grenada, and a three-quarter bred to the Agricultural Department, British Virgin Islands.

The pure bred Holstein bull "Ghandi" was loaned to the Livestock Farm, Bayfords, St. Kitts.

Complete Lactation Figures 1947-48

Name of Cow	Period of Lactation		No. of days in Milk	lbs. of Milk produced	Remarks
	From	To			
Princess ..	27.7.47	11.5.48	290	4,788½	
Anna ..	2.8.47	20.4.48	263	4,163½	
Duchess ..	5.8.47	22.7.48	353	6,311½	
Star ..	14.8.47	7.8.48	360	6,825½	
Belle ..	3.9.47	29.5.48	270	6,094½	
Gloria ..	1.8.47	9.7.48	344	3,824½	(Milked once daily).

During their lactations low grazing (chiefly Antigua Hay Grass) was supplemented with cane tops, Elephant Grass, Guatemala Grass and locally made Hay. Concentrates (cotton seed meal alone or 1 part cotton seed meal plus 2 parts cracked corn) were fed at the rate of 3 lbs. per 10 lbs. or part thereof of milk produced.

Horses

The two imported Light Draught French Canadian horses ("Cemelon de Cap Rouge" and "Nelly de Bagot") were maintained in good health. The latter gave birth to a filly during the year; it has made very satisfactory progress.

"Queen", a locally purchased brood mare, gave birth to a filly sired by "Cemelon de Cap Rouge".

Two half-bred fillies, "Cemroy" and "Cemqueen", born in 1947, have grown well; and the pure bred French Canadian colt, also born in 1947, is developing into a fine stallion.

Donkeys

The pure bred jack "Dan Kiger" continued to serve both horses and donkeys. He was in good health throughout the period, except for intermittent foot trouble.

"Mary" and "Wild Fly" two selected local jennies gave birth to a jack and Janet respectively.

Sheep

The flock continued to thrive and multiply well. Liberations from the Station are in very great demand.

Of the ewes which lambed 50% produced twins and 50.9% of the lambs born were ewes.

Goats

Two native does were purchased and have been mated to a pure British Alpine Buck. When they kid they will be milked and yields recorded.

Poultry

Two pens of Leghorns and New Hampshires respectively were raised from day-old chicks imported from the U.S.A. The New Hampshires (55) arrived in good condition, but the Leghorns (30) suffered very badly being six days overdue.

Of the 65 birds raised up to the cockerel or pullet stage 40 were sold locally.

Stud Services

The following were recorded during the year. They do not include services to animals of the Station.

	No. of services
Pure Bred Holstein "Ghandi" ..	35
Canadian Stallion "Cemelon de Cap Rouge" ..	21
American Jack "Dan Kiger" ..	21

Stall-feeding Peasant Unit

The buildings consist of an entirely enclosed and roofed pen large enough to hold two full-grown animals, a similar pen to hold two calves and a small covered milking shed with a stanchion to accommodate one animal at a time. All the pens have built-in feeding racks.

These buildings were erected almost entirely out of local material (thatching was done with cane trash and hay grass) at a total cost of \$305.98.

Adjacent to the building is an area planted in the following grasses—

(A)	Guinea Grass	..	..	..	.55 acres
(B)	Elephant Grass	..	..	..	.25 "
(C)	Guatemala Grass	..	..	..	.32 "

In front of the buildings is a small exercising paddock about 1/5 acre in size.

A start was made with one cow in calf in August after the grasses had been established. The animal was fed as much grass as she could eat from the adjacent plot, and in addition 3,024 lbs. were taken away (from 5th August to end of year) to feed animals elsewhere.

Bagasse was used as bedding in the pen. About once per week trampled animal and vegetable droppings, soiled and wet bagasse etc. were removed from the pen and weighed. During the period under review (August 5th--December 31st, 1948) 5,252 lbs. of this type of "pen manure" was obtained.

Instructional

Five carefully selected cadets were taken on for training as from August; four from Antigua and one from Montserrat. Six who were taken on in 1947 completed their training during the year and were given certificates.

Cadets in training are given a carefully planned 12-months course consisting principally of practical work on and off the Station under the supervision of senior officers.

Talks and demonstrations were given from time to time to primary school teachers, school children and individuals from all sections of the community.

12. (2) GOVERNMENT DAIRY AND AGRICULTURAL STATION BAYFORDS, ST. KITTS

The farm was established under Colonial Development and Welfare Scheme No. D.288 to foster the development of animal husbandry in St. Kitts. Developmental work—clearing, fencing, buildings, water supplies, etc.—was practically completed by the end of 1948.

Meteorological

Weather conditions were generally favourable throughout the year. Rain fell on 198 days and distribution was good. The total rainfall amounted to 54.75 inches and the monthly figures are given below:

					<i>Inches</i>
January	..	..	..	..	4.29
February	..	..	..	..	2.75
March	..	..	..	..	1.81
April	..	..	..	..	3.36
May	..	..	..	..	4.56
June	..	..	..	..	3.24
July	..	..	..	..	3.51
August	..	..	..	..	4.81
September	..	..	..	..	6.32
October	..	..	..	..	8.49
November	..	..	..	..	5.01
December	..	..	..	..	6.70
Total	..	..	..	..	54.85

The mean rainfall for the past four years at Bayfords is 54.23 inches.

From the beginning of August daily thermometer readings were taken and the monthly means of these are recorded below.

Month	Dry Bulb		Wet Bulb		Per cent Rel. Humidity		Max.	Min.
	9 a.m.	3 p.m.	9 a.m.	3 p.m.	9 a.m.	3 p.m.	9 a.m.	3 p.m.
August ..	78.4	79.1	75.3	75.2	86	83	80.7	70.5
Sept. ..	78.2	78.5	74.8	74.9	85	83	80.9	68.6
Oct. ..	78.3	78.0	74.5	74.3	82	82	80.1	67.3
Nov. ..	76.7	76.2	73.6	73.5	86	86	78.9	65.6
Dec. ..	74.3	75.1	71.4	71.7	86	86	76.9	62.6

Highest maximum temperature was 82°F recorded in August, September and October, and the lowest minimum temperature was 59°F recorded on 30th December.

Agricultural

The cultivation of grass for grazing and stall feeding is of the first importance. The chief varieties of grass which are used at Bayfords are Elephant grass (Uganda variety), Para grass and Guinea grass and to a lesser extent Bermuda grass and Savannah grass. Molasses grass and Guatemala grass have also been tried. Small observation plots of Alfalfa, varieties of Clover and tropical Kudzu were maintained but none of these has yet warranted extensive trial.

Some paddocks were ploughed, cropped and then replanted in Elephant grass. The following crops were grown and harvested during the year:—

Sweet potatoes ..	..	..	13½ acres
Peas & Beans ..	..	..	2½ "
Maize ..	..	..	2¼ "
Tomatoes ..	..	..	1¼ "

In addition a vegetable garden was maintained and this was extended to establish a fruit orchard. By the end of the year some Julie mango, pineapple and citrus plants had been set out.

Cattle

At the beginning of the year the herd numbered 58 head. There were two deaths during the year, due to coccidiosis and pneumonia respectively. Both bulls were disposed of; one was suffering from articular rheumatism; the other was aged. Five cows and two heifers were culled and four steers sold. A pure bred Holstein bull ("Ghandi") was received on loan from the Antigua Department of Agriculture, to replace the former herd bull. Twenty-three cows calved, one with twins, giving 15 bull calves and 9 heifer calves. The herd numbered 68 at the end of the year. Of this number 20 were females of breeding age, 10 of them being home bred grade Holsteins. A further 12 grade heifers are due for breeding in 1949 and 9 more in 1950. The farm is therefore within reasonable distance of achieving its first objective—the breeding of a herd of improved dairy cattle large enough to form an economic unit.

An innovation towards the end of the year was the recording of birth weights of calves, which is to be followed up by periodical weighing as a check on the progress of individuals and as an aid to selection. The eight calves weighed ranged from 66 lbs. to 88 lbs. at birth with an average of 74.3 lb.

With the exception of the young calves and the herd bull no animals are housed. They graze in fenced paddocks and come in only for milking which is done twice daily in a twelve-stanchion shed. One or one and a half pounds of concentrates are fed to each cow in milk at each milking. Cotton seed meal and corn meal, both locally produced are generally used, but imported dairy meal has had to be used at times when local feeds were scarce. Calves are removed from the cow at birth and hand reared. This has proved perfectly satisfactory with most cows, but with some it is necessary to bring the calf to the head of the dam to induce her to let down her milk. In no case was suckling permitted. Most heifers calving for the first time are amenable to being milked in the absence of the calf.

The results of lactations completed during 1948 are summarised below:

Yields of Milk in lb.	Adult Cows		First Calf Heifers (All milked without the calf being present)
	Milked without calves present	Milked with calves present	
	No.	No.	No.
Under 1,000 ..	4	—	2
1,000—2,000 ..	—	2	—
2,000—3,000 ..	1	—	1
3,000—4,000 ..	—	—	—
4,000—5,000 ..	1	—	—
5,000—6,000 ..	—	—	1
6,000—7,000 ..	—	—	2
	6	2	6
Average lactation ..	1,262 lb. in 18 weeks	1,745 lb. in 19 weeks	3,760 lb. in 34 weeks

The individual records of the four best heifers and the four best adult cows are shown in the tables below. The figures give some indication of the superiority of grade Holstein cows over the foundation cows for milk production.

First Calf Heifers.

Name	Grade	Yield of milk	Max. Week	Fat	Fat	Lactation
		lb.	lbs.	%	lb.	weeks
Blossom ..	3/8 Holstein	6,993	188	4.13	286.7	57
Sally ..	" "	6,027	191	3.64	216.9	46
Blk. Bess ..	" "	5,649	163	3.27	180.7	46.5
Bertha ..	" "	2,946	148	3.69	106.1	41

Foundation Cows.

Name	Type	Yield of milk	Max. Week	Fat	Fat	Lactation
		lb.	lbs.	%	lb.	weeks
Buttercup ..	Grade Jersey	4,020	168	3.53	140.7	44.5
Belle ..	Creole ..	2,231	186	4.36	95.9	31.4
Lizzie ..	" ..	1,785	195	3.49	60.7	15
May ..	" ..	1,706	104	4.39	73.4	23

The total quantity of milk produced during the year was 56,577 lb. or about 5,470 gallons. After some experimenting butter of excellent quality was made on the farm which compared favourably with imported butter in colour and flavour.

In the following table is shown the average composition of the milk produced on the farm during the year.

Composition of Milk.

Month	Total Solids	Fat	Solids not Fat
	%	%	%
January ..	12.75	4.03	8.72
February ..	12.40	3.91	8.49
March ..	11.53	3.21	8.32
April ..	11.88	3.41	8.47
May ..	12.23	3.68	8.50
June ..	12.38	3.81	8.57
July ..	12.67	3.99	8.68
August ..	12.56	3.86	8.70
September ..	13.13	4.42	8.71
October ..	13.02	4.31	8.71
November ..	12.90	4.30	8.60
December ..	13.50	4.63	8.87
Means ..	12.58	3.97	8.61

*Note:—*In March and April there were five suspected cases of mastitis which probably accounts for the low non-fatty solids content of the milk in these months.

The list of stud services is given below. The pure bred bulls were used only with farm cows while the $\frac{3}{4}$ bred bull was used with cows which were sent for service by livestock owners.

Pure bred bull (Sampson)	17 services.
" " " (Ghandi)	10 "
" " " (Riddel)	24 "

By courtesy of the Jamaica Department of Agriculture semen of their outstanding Holstein bull Carnation Minuteman was made available for a limited trial of artificial insemination. Seven animals at Bayfords were inseminated by the Veterinary Officer with semen transported by air from Jamaica but it is too early to determine how many of the services have been effective.

Equines.

One filly foal was born during the year, a half-bred by the thoroughbred stallion Hamoa. The five horses and the mule were in good condition throughout the year. There was, however, a single case of acute gastric enteritis which resulted in the death of the thoroughbred stallion. There has not been a single case of colic among the horses which were kept in the paddocks.

There were fourteen studs services with five returns.

Pigs.

The two Duroc-Jersey pigs were disposed of during the year and all efforts centered on raising Berkshire piglets for distribution as there is a large demand for young pigs for both breeding and fattening. The two sows farrowed only once with litters of 8 and 10 respectively. These were distributed for breeding with the exception of gilt which was retained on the farm. Two young gilts of mixed blood were purchased at the end of the year which will, in time, be used for breeding.

Stud services were:—Berkshire Boar 6 services
Duroc-Jersey Boar 1 service

Raising of pigs on imported feed only is far from economic. Accordingly every effort is now being made to use the minimum of imported feed with the maximum of farm products. The basic ration consist of a mixture of 50 lb. of imported Hog Grower meal and 75 lb. local cornmeal. The adult boar receives 2 lb. concentrate per day and the adult sows 3 lb. each. A bundle of green food (para grass, elephant grass, sweet potato vines, french weed etc.), about 11 lb. in weight is given in the evening. In the morning no grass is given, unless the pigs are kept in, as in the paddock they can forage at will. When corn is not available the ration is made up with sweet potatoes, flour sweepings, boiled breadfruit etc.

After farrowing the sow, with her litter, is turned into a small paddock in which there is a shelter. Here $1\frac{1}{2}$ lb. of concentrate is fed to her twice daily and the sweet potatoes, which are growing in the paddock, provide the remainder of the ration. At about three weeks the piglets are given access to a little dry meal placed behind a "creep". The quantity of meal is gradually increased and finally a change over to wet feed is made. Generally in eight weeks the piglets are independent of their mother and can be weaned easily.

Poultry

At the beginning of 1948 the poultry population was 43 birds (6 cocks and 37 pullets and hens). During the year several birds were culled and at the end of the year all that remained of the original stock was 11 hens. Replacements were made from incubations and the entire lot allocated as follows:—

Pen 1	11 pullets (hatched 1948) and 1 cockerel (imported)
Pen 2	10 pullets (" 1948) and 1 cockerel (Farm)
Pen 3	11 hens (" 1947) and 1 cockerel (imported)

Two cockerels (1 imported and 1 Farm) are held in reserve. Pens 1 and 3 are Rhode Island Red and Pen 2 consists of grade Leghorn and Barred Plymouth

Rock pullets mated with a Rhode Island Red cockerel for experimental work.

Rigid culling of suspects was carried out in an effort to eradicate fowl paralysis which has continued to be very troublesome. In consequence the number of layers was reduced and a smaller number of eggs was available for distribution than in 1947.

Sold for food	1,887 eggs
Sold for hatching	892
Incubated on farm	135
Broken etc.	29
Total	2,943

Average daily production of eggs was 8 as compared with 11.9 for the previous year.

A total of 65 chickens was reared (42 R.I.R. and 23 Grade). Of this number 11 pullets and 2 cockerels (R.I.R.) and 10 pullets (Grade) were retained on the Farm for replacements and remainder disposed of as follows:—

	<i>Pullets</i>	<i>Cockerels</i>
Sold for breeding	14	15
„ „ food	5	8
Total	19	23

Three Rhode Island Red cockerels were imported from Trinidad for breeding purposes and were being tried at the end of the year.

Goats

A pure bred British Alpine buck goat was imported from Trinidad early in the year. This animal has been fairly well used and has already sired some fine looking kids. Stud services for the year were :—

Quarter ended 30th June	4 services
„ „ 30th September	9 „
„ „ 31st December	11 „
Total	24 „

13. SUGAR CANE EXPERIMENTS ON ESTATES

(1) ANTIGUA

This work, sponsored by the Sugar Cane Investigation Committee of Antigua, is undertaken in collaboration with the Department of Agriculture. The Department provides most of the supervising staff, conducts two large long-term Manurial Experiments, maintains some observation plots and supplies most of the planting material, particularly of newer varieties. The remaining experiments are conducted on estates throughout the island.

The following large scale experiments were reaped during the crop season of 1948:—

	<i>Plants</i>	<i>1st Ratoons</i>	<i>2nd Ratoons</i>	<i>3rd Ratoons</i>
Variety Trials	8	8	2	1
Permanent Manurial Trials	—	2	—	—
Time of Planting of Standard Varieties	4	—	—	—
Time of Planting and Manurial Trial	1	—	—	—
Short term Manurial Trials	2	1	3	—
Spacing Interval Trials	—	6	2	—
Experiments with massive applications of Nitrogen & Phosphate	2	—	—	—
	17	17	7	1

In addition, five observation plot areas were reaped in which the latest varieties were for the first time given preliminary tests against standard varieties. The object of this is to select from the large number of new varieties received from Barbados, those which seem worthy of further trial and possible extension.

The results of the large-scale experiments were summarised, published under the title "Antigua Experimental Scheme—Preliminary study of Yield Data for Experiments reaped in 1948 by P. E. Turner, F. H. S. Warneford and E. R. H. Martin" and are being widely circulated.

The following recommendations are extracted from this publication :—

Soil Type	Recommended Varieties (per cent of total area)							
	1947				1948			
	B4098	B37161	B37172	B34104	B4098	B37161	B37172	B34104
Wetherell Clays	50	—	—	50	75	—	—	25
Fitches Clays	50	50	—	—	50	50	—	—
Blubber Valley Loams	—	20	60	20	—	20	60	20
Gunthorpe Clays	34	66	—	—	34	66	—	—
Tomlinson Clays	34	66	—	—	25	75	—	—
Lindsey Clays	50	25	25	—	80	10	10	—
Otto Clays	50	50	—	—	66	34	—	—
Bendal Clays	50	—	50	—	75	—	25	—
Blubber Valley Clays	50	—	50	—	50	—	50	—

Of the experiments reaped in 1948, those being continued as ratoons in 1949 were manured according to plan, and spring counts taken. Routine work was carried out on all experiments for reaping in 1949 and in addition, a new scheme of experiments to be reaped for the first time in 1950 was approved by the Sugar Cane Investigation Committee, laid out, planted and manured as far as weather conditions up to the end of the year permitted. The scheme includes :—

- 10 Variety Trials
- 4 Time of Planting Trials
- 3 Manurial Trials
- 1 Mulching Trial
- 9 Varietal Observation Plot areas

Of the above, 7 Variety Trials, 4 Time of Planting Trials, 3 Manurial Trials and 6 Varietal Observation Plot areas were planted up to December 31st, 1948. It is planned to plant the remainder early in 1949.

(2) ST. KITTS-NEVIS

Experimental work with the sugar cane crop was continued as in previous years and was carried out in co-operation with St. Kitts Sugar Association Limited and under the direction of Mr. P. E. Turner, M.Sc., F.R.I.C., Agronomist on the staff of the Comptroller for Development and Welfare in the West Indies.

Sixteen varietal, five spacing and two manurial experiments were reaped during the year under supervision of officers of the department. In the absence of Mr. Turner the Agricultural Superintendent compiled the "Preliminary Report on Field Experiments reaped in 1948". The report was printed and distributed by the Sugar Association to owners and attorneys of estates, managers and others.

The following is a summary of the more important conclusions which have been drawn from the results of experiments reaped during the year.

Varieties

The variety B. 37161 is taken as the standard for comparison.

B4098 has given yields of sugar equal to those of B.37161 on the drier lower lands but the yields of sugar of this variety on the wet lower lands were not equal to those of B.37161. Small areas of B.4098 might be tried on the drier lower lands. As a ratoon on the middle lands of intermediate rainfall, on the wetter middle lands and on the upper lands of intermediate rainfall this variety has given yields of sugar equal to those of B.37161. It is however considered unsafe to plant B.4098 on these lands in view of the tendency of this

variety to uproot, dry out and die. On the wetter upper lands B.4098 has given lower yields of sugar than B.37161.

B.34104 has given as good yields as B.37161 in experiments on the drier lower lands and the wetter upper lands, lower yields on the dry middle lands and middle lands of intermediate rainfall and better yields on the wetter middle lands and upper lands of intermediate rainfall. This variety is again recommended for planting, in limited extent, only in deeper soils of the high rainfall zone of the lower lands and the intermediate rainfall zones of the middle and upper lands.

B.41211 has given in experiments on the drier lower lands, dry middle lands, wetter middle lands and the wetter upper lands as good yields of sugar as B.37161. In experiments on the wet lower lands and on the upper lands of intermediate rainfall this variety has given better yields than B.37161. B.41211 is recommended for planting in all areas on a small scale.

B.4110 has given lower yields than B.37161 in all experiments in which it was tried and is not recommended for planting.

B.4145. In the single experiment in which B.4145 was included this variety gave as good a yield of plant sugar as B.37161. Further trials with B.4145 will be undertaken.

B.41227 beat all other varieties in one experiment on the upper lands of intermediate rainfall. This variety appears to have definite possibilities for certain districts of the island and it has been included in trials for reaping in 1949.

Summary of Planting Recommendations

Elevation	Rainfall	Recommended varieties in 1948	
Lower lands ..	Low	B.37161	Some B.41211
	Intermediate	B.37161	
	High	B.37161	for "main crop". Some B.34104 in deeper soils on fringe of middle lands of high rainfall. Some B.41211
Middle Lands ..	Low	B.37161	
	Intermediate	B.37161	Some B.34104 and B.41211
	High	B.37161	
Upper Lands ..	Low	B.37161	Some B.41211
	Intermediate	B.37161	Some B.41211 and B.34104
	High	B.37161	

Spacing Interval

The results of the 1948 experiments confirm the conclusions recorded in the 1947 report. On drier and wetter lower lands and on middle lands of intermediate rainfall, loss in yield has resulted from crowding the stools in the row. On wetter middle lands there is nothing much to choose between the yields obtained from 5 ft. to 6 ft. rows.

Manures

Kind of Nitrogen. Both sulphate of ammonia and nitrate of ammonia gave rise to considerable gains in yield of first ratoon cane in an experiment on the lower lands. There was no significant difference in the gains obtained from Nitrogen in the form of sulphate or nitrate of ammonia.

Long-term Manurial Experiment. Seven crops have been reaped on the experimental area which is situated in the drier lower lands. No gain of plant cane has been found to result from applying sulphate of ammonia in addition to pen manure. Application of 3 cwts. sulphate of ammonia to each ratoon on the plots pen-manured as plant cane has given rise to a total gain of 27.77 tons cane over the four ratoon crops, or 6.94 tons cane per ratoon crop.

Treatment of the three plant crops with pen manure has given rise to a total gain of 3.06 tons cane over the three plant crops treated with complete artificials. Complete artificials with a megasse mulch on the plots have resulted in a total gain of 8.95 tons cane over the pen manure plots for the three plant crops.

New varieties from the B.W.I. Central Sugar Cane Breeding Station at Barbados.

On the 9th April, three cuttings each of 45188, 45224, and 45270, and on the 22nd October 3 to 4 cuttings each of 45152, 45237, 45297, 45188, 45156, 4556, 4553, 45267, 45151, 4502, 45137, 4503, 4530, 4572, 4596, 4581, 4504, 4534, 4506, 46284, 46232, 46223, 4691, 46144, 4604, 46288, 46136, 4681, 46102, 4692, 46397 and 46364, were received from the Central Sugar Cane Breeding Station at Barbados.

These varieties have been planted at the Experimental Station at La Guerite but many of the varieties will have to be multiplied on the estates as the land at the station which is available for this work will not be sufficient for multiplying so large a number of varieties.

Distribution of cane varieties in cultivation with some observations on increased yields from the introduction of new varieties.

In Table XXIII is given the distribution of varieties for crops harvested during the period 1930 and 1942 to 1948. The figures are percentages of the total acreage harvested.

TABLE XXIII
Distribution of Cane Varieties, St. Kitts

Variety	Crop Year							
	1930	1942	1943	1944	1945	1946	1947	1948
B.37161 ..	—	—	0.07	5.63	30.80	56.96	73.00	84.69
B.34104 ..	—	—	—	0.45	2.10	7.74	8.34	4.76
B.3439 ..	—	18.24	25.80	26.29	18.05	6.02	4.86	2.69
B.35187 ..	—	—	0.40	2.14	5.55	7.70	4.63	1.14
B.2935 ..	—	61.46	54.68	47.57	26.29	9.70	2.58	0.61
B.H. 10(12)	69.50	17.64	17.00	15.70	12.23	6.98	2.41	1.21
S.C. 12/4 ..	17.40	—	—	—	—	—	—	—
B.4098 ..	—	—	—	—	—	0.10	0.70	1.93
B.41211 ..	—	—	—	—	—	—	0.01	0.31
B.38212 ..	—	—	—	—	—	0.05	—	9.11
Mixed ..	—	1.30	0.44	1.08	4.45	4.52	3.47	2.55

The figures in the distribution table show that during the period 1944 to 1948 the variety B.37161 has become the predominant variety on the island and in 1948 occupied 85 per cent of the acreage under cane. Returns from estates at the end of the year indicated that for the 1949 crop there has been a further increase in the area occupied by this variety to 93 per cent of the cane acreage.

The data given in Table XXIV are presented to show the value of the work at the West Indian Sugar Cane Breeding Station at Barbados on the production of new and better varieties and the importance of the varietal trials which are conducted by the Department each year. In some quarters some doubt appears to exist regarding increases of cane and sugar yields which have been obtained since the introduction of the newer varieties.

TABLE XXIV
Varietal distribution and Cane and Sugar Yields at Different Periods : St. Kitts

Period and varietal distribution	Annual rainfall in inches Mean for period	Artificial manures Mean annual importation in tons	Tons cane per acre Mean for period	Tons cane per acre per inch mean rainfall	Tons sugar per acre Mean for period	Tons sugar per acre per inch mean rainfall
1927-1932 High percentage of B.H. 10 (12), White Transparent & other varieties..	56	547	21.72	0.388	2.56	0.046
1933-1938 70% B.H. 10 (12) with S.C. 12/4 & other varieties ..	57	1,949	24.73	0.434	3.36	0.059

TABLE XXXIV.—Continued

Period and varietal distribution	Annual rainfall in inches Mean for period	Artificial manures Mean an- nual im- portation in tons	Tons cane per acre Mean for period	Tons cane per acre per inch mean rainfall	Tons sugar per acre Mean for period	Tons sugar per acre per inch mean rainfall
1939-1944 31% B.H. 10 (12) 50% B.2935 17% B.3439	57	1,518	26.93	0.472	3.37	0.059
1945 31% B.37161 26% B.2935 18% B.3439 12% B.H. 10 (12)	53 (1944)	1,292	26.22	0.495	3.32	0.063
1946 57% B.37161 10% B.2935 8% B.35187 8% B.34104 7% B.H. 10 (12) 6% B.3439	47 (1945)	2,106	27.99	0.595	3.50	0.074
1947 73% B.37161 8% B.34104 5% B.3439 5% B.35187 3% B.2935 2% B.H. 10 (12)	38 (1946)	1,663	26.13	0.684	3.10	0.082
1948 85% B.37161 5% B.34104 3% B.3439 1% B.35187 1% B.2935 1% B.H. 10 (12) 2% B.H. 10	48 (1947)	2,214	26.63	0.555	3.10	0.065

During the period 1945 to 1948 allocations of artificial manures did not usually arrive at dates scheduled for delivery and there was therefore overlapping of supplies for different crop years.

It is considered that the best method of examining the figures which are recorded in Table XXIV is to compare means for the periods 1933-38 and 1939-44 with means for the period 1945-48. These means are given below.

Varieties	1933-44	1945-48
	Predominantly B.H. 10(12) & B.2935	Predominantly B.37161
Mean annual rainfall in inches ..	57	47
Annual importation of artificial manures in tons	1,734	1,819
Tons cane per acre	25.83	26.74
Tons cane per acre per inch mean rainfall ..	0.453	0.582
Tons sugar per acre	3.37	3.26
Tons sugar per acre per inch mean rainfall ..	0.059	0.071

The data above indicate that the introduction of the variety B.37161 has resulted in an increase of cane and sugar yields of approximately 30 per cent and 20 per cent respectively.

B.37161 is a nobilised seedling which was bred at the British West Indies Sugar Breeding Station at Barbados and was first distributed in St. Kitts in 1941-42. It appears that the outstanding performance of this variety is due to its ability to make better use of available soil moisture than any other variety which has so far been introduced into the island.

TRIAL TO OBSERVE THE EFFECT ON GERMINATION OF TREATMENT OF SUGAR CANE SETTS WITH CERTAIN DISINFECTANTS BEFORE PLANTING

One pound of each of the following materials was kindly supplied by Messrs. Imperial Chemical Industries Limited for the trial.

- (1) R1334 x 14 (water dispersible powder containing 50% of Salicylanilide)
- (2) R1104 x 51 (water dispersible powder containing 50% of Tetramethylthiuram disulphide)
- (3) Agrosan GN (1% Mercury)
- (4) Hortosan DP (5% Mercury)

The trial was carried out at Mansion Estate (West Pasture Field) on upper lands of high rainfall. It consisted of one 6 x 6 Latin square and was planted on the 26th November.

The plots were 1/50th acre in area and there were 65 cane holes per plot. The variety was B.37161 and there were 3 buds on each sett. No selection of the setts was made and, as they were very long, flat planting was used.

Experimental treatments

1. No soaking or dipping
2. Soaking overnight in lime water (standard practice on many estates)
3. Ends dipped in 0.5% R1334 x 14 solution (instantaneous dip)
4. " " " 0.5% R1104 x 51 " " "
5. " " " 1% Agrosan GN " " "
6. " " " 0.06% Hortosan DP " " "

Final germination count

Results

Treatment 1	33 per cent
2	51 " "
3	53 " "
4	51 " "
5	49 " "
6	51 " "

These results show that treated setts gave a better germination than setts which were unsoaked in limewater. Treatment of setts with the four disinfectants under trial gave no better germination than soaking overnight in limewater and all the disinfectants were about equal in their effects.

The general absence of red rot and pineapple diseases in the planting material which was used in the experiment probably accounts for the failure of the treatments with disinfectants to show any results.

In late November and December low temperature on the unper lands in high rainfall districts of the island appears to be the factor which contributes most to poor germination of setts and to the difficulty of obtaining a satisfactory stand on fields planted late in the year. The rainfall recorded at Mansion Estate for November and December amounted to 16 inches. Early planting with moderately young planting material should solve the germination problem of the wet upper lands.

14 CENTRAL SEA ISLAND COTTON BREEDING STATION: MONTSERRAT

The Annual Report of the Cotton Breeding Station, Montserrat, embodying breeding and other investigational work with cotton has been prepared as a separate report which will appear in the Empire Cotton Growing Review.

Sixteen of this year's progenies will be carried on in 1949, viz :—M4801, M4802, M4803, M4804, M4807, M4808, M4809, M4810, M4811, M4812, M4813, M4814, M4815, M4816, M4817 and M4818.

The routine seed multiplication programme was carried on, and 135,058 lbs. of cotton seed was sold to growers for the planting of the island's 1948 crop. Supplies of seed sent to other islands during the year were as follows :—

	Pedigree Seed	Ordinary Planting Seed
St. Kitts	100 lbs.	—
Nevis	300 „	11,252 lbs.
Antigua	180 „	29,630 „
St. Lucia	—	12,608 „
Tortola	50 „	360 „
Puerto Rico	—	4,460 „

15. MANURIAL EXPERIMENTS ON COTTON: MONTSERRAT

With the co-operation of various estate owners and managers the experiments on the four major soil types were continued this year. In the experiments on Lithosol, Brown Earth and Alluvial Soils :

N1 = Ammonium Sulphate at 200 lbs. per acre	
N2 = „ „ „ 400 „ „ „	
P1 = Superphosphate „ 200 „ „ „	
P2 = „ „ „ 400 „ „ „	

Fresh Ash (Lithosol) Soil. The experiment on this soil type was laid down in the same field (Belle Field, Richmond Estate) as in the previous two years—with Block I in the same position. Scorching of the foliage by ammonium sulphate, aphid attack in various spots in the early stage and later cotton leaf-worm attack hampered the progress of the experiment. Treatment totals are as follows:—

Yield of Seed Cotton in pounds per acre

	P0	P1	P2	Totals
N0	1,269	1,318	1,408	3,995
N1	1,639	1,268	1,453	4,360
N2	1,167	1,575	1,113	3,855
Total	4,075	4,161	3,974	

Statistical analysis showed no significant differences due to nitrogenous or phosphatic applications but the F value for inter-action was significant for P = 0.05. The lower rate of application of nitrogen, (200 lbs. an acre ammonium sulphate) has, however, given as in previous years the highest increase in yield, 29% over the control, an increase of 300 lbs. an acre, and this when applied without the addition of phosphate. Seed Cotton yields from this treatment over the three years are as follows :—

Yield of Seed Cotton per acre in lbs.

Year	Control	N1P0	Increase	% Increase	Price per lb. Lint	Gross Increased revenue per acre (Approx.)
1946 ..	1,337	1,445	108	8%	2/—	£3
1947 ..	1,817	2,238	420	22%	2/6	£16
1948 ..	990	1,280	290	29%	3/2	£13

Responses to superphosphate and higher applications of ammonium sulphate have not been very marked in any year.

Trials comparing ammonium sulphate with cotton seed meal (CSM) the manure generally used on this estate are indicated.

Brown Earth Soil. The site of this experiment was changed from Tuitts in the windward of the island to Amersham in the leeward side, and the experiment was planted on April 5th, about one month after the beginning of the planting season. Germination was good and final stand fairly uniform from plot to plot. There was no noteworthy incidence of pests and disease attack. Manures were applied one month after planting. Results were as follows :—

Yield of Seed Cotton in lbs.

	P0	P1	P2	Totals
N0	990	1,151	1,119	3,260
N1	1,177	1,248	1,146	3,571
N2	1,186	1,184	1,486	3,856
Total	3,353	3,583	3,751	

Though differences failed to reach statistical significance every treatment showed an increase over the control. Highest increases were obtained where both manures were used in combination in equal quantities, the N2P2 treatment being the highest, 50% (or 387½ lbs. an acre) over the control and the N1P1 next, being 26% over the control. Yield from the control plots was at the rate of 775 lbs. per acre.

Shoal Soil. The site of this experiment was changed from Waterworks Estate to peasant land at Cork Hill and the experiments simplified in that nitrogen and phosphate were applied in single doses only, and a pen manure (PM) treatment in which the amount of nitrogen per acre was made approximately equivalent to the amount of nitrogen in ammonium sulphate at 200 lbs. per acre was included in each block. For various reasons—scrappy cultivation, damage by stock, irregular stand—it was thought that plot yields in two blocks would not produce any valid results and these blocks were abandoned. Plot yields in Blocks III and IV are given below. There was a small percentage of Black Bolling.

	O	N	P	NP	PM
Yield in lbs. of Seed Cotton	323	377	538	472	452
% Increase		16%	66%	46%	40%

There was an increase in yield from all treatments, the highest increase being obtained from phosphatic applications alone applied at the rate of 300 lbs. an acre. Yield from the control plots was at the rate of 500 lbs. seed cotton per acre.

Alluvial Soil. The site of this experiment was moved from Trants to the Bath Field, Richmond Estate. Plot yields were as follows :—

Yield of Seed Cotton in lbs.

	P0	P1	P2	Totals
N0	1,124	1,247	1,125	3,496
N1	983	1,125	880	2,988
N2	940	989	1,014	2,943
Total	3,047	3,361	3,019	

There was an appreciable depression in yield due to the application of ammonium of sulphate—probably the result of scorching of the foliage in the early stages, and, later, of heavier infestation of cotton leafworm on nitrogenous manured than on non-nitrogenous manured plots.

Phosphate was applied earlier in this experiment than customary, 13 days after planting and it is worthy of note that the P1 plots have given an increase of 10—11 per cent over the control plots.

Observation Experiment. A trial to compare the effect of artificials, pen manure, and the local cotton seed meal (C.S.M.) was laid down in two randomised blocks on an alluvial piece of land at Delvins, situated at the base of a shoally hill. An attempt was made to equalize the amount of nitrogen present in the three treatments. From chemical analyses carried out by the Imperial College of Tropical Agriculture the amounts of nitrogen, phosphate and potash in pen manure and cotton seed meal compared with artificials applied were as follows :—

	Total lbs. per acre	N lbs.	P per	K acre
Ammonium Sulphate ..	150	30.9	—	—
Superphosphate ..	300	—	16.6	—
Cotton Seed Meal (C.S.M.)	600	27.34	8.52	9.66
Pen Manure (P.M.) ..	17,360	34.72	26.86	17.79

Yields were as follows :—

Treatment	O	N	P	NP	P.M.	C.S.M.
Yield of seed cotton in lbs. ..	581	775	633	736	763	902
% Increase	—	33%	9%	27%	31%	72%

All treatments gave yields higher than the control, cotton seed meal being highest with an increase of 72%, with ammonium sulphate next closely followed by pen manure. The phosphate treatment gave the small increase of 9%.

The soil is by no means typical of the rest of the island but the results do give some indication of the effects of the different manures, and repetition of the trial is indicated.

CROP ROTATION TRIAL

A crop rotation trial to compare different systems of cotton growing has been started at the Otway Peasant Land Settlement. The treatments comprise:—

- (a) Cotton grown annually, with a weed fallow in the cotton close season.
- (b) Cotton grown annually, except for a green manure crop for a complete year at intervals, and with a bare fallow during the cotton close season.
- (c) A sugar-cane, cotton, food crop and green manure rotation. Cane is to occupy the land from 1948 to May, 1950, giving one plant crop and one ratoon crop. A food crop and green manure are to be grown to April, 1951, and then three crops of cotton are to be followed by a year of a food crop and green manure, thus completing a seven year rotation in October, 1954.
- (d) Similar to (c) but cane is replaced by a soiling grass.

The cotton was planted in March, and the sugar cane and soiling grass in April. Each plot has been divided into two sub-plots for the inclusion of a pen manure versus no pen manure treatment.

16. OTHER EXPERIMENTS: MONTSEERRAT

Sweet Potato Variety Trial

A sweet potato variety trial started at the Grove Botanic Station with the three varieties B29, B34 and Three Months in 1947 was repeated three times. Yields in lbs. per acre are given in Table XXV.

TABLE XXV.

Date reaped	Plot No.	Three Months	B29	B34
28/9/47	Pot 2	5,921	5,309	3,216
16/3/48	Plot 8	3,943	3,075	3,466
21/9/48	Plot 2	6,378	15,008	12,864
3/1/49	Semper's Plot	4,371	4,778	4,704
	Total	20,973	28,170	24,250

Differences in the first year were not significant but in the last trial differences reached statistical significance. In the first two cases Three Months gave the highest yield, whereas in the last two, B29 was the highest yielder. There was no marked seasonal effect between the varieties; both trials repeated in September gave varying results between them. The main indication seemed to be that B29 is the highest yielder over the period.

The sweet potato variety B44 was introduced from Antigua during the year. It has not yet been fully tested, but shows promise.

Tomato Variety Trial

A trial comparing the tomato varieties Marglobe, Rutgers and Grothens Globe planted at the Grove Botanic Station was harvested at the usual season in 1948. There was no indication that Rutgers and Grothens Globe were in any way superior to the long used variety Marglobe. Marglobe gave a yield in the trial at the rate of 6,374 lbs. of first quality tomatoes per acre. This yield was achieved in spite of most vigorous discarding; an amount of discards

about equal to that of the first quality tomatoes was used for pig feeding or given away.

Tomato Variety and Cultural Experiment

An experiment, consisting of two blocks at the Grove Botanic Station and one at the Otway Peasant Land Settlement, was laid down late in 1948 to compare the varieties, Marglobe, Sorpresa, Pelota and Lima, and also to observe the effects of various cultural methods. The results indicated that Marglobe is still the most suitable variety Montserrat can produce for the Canadian market. Other differences were not very striking, possibly because the sites used were on soils not sufficiently fertile for tomatoes to give of their best. The experiment included the training of tomatoes on trellises, and there were indications that this method of cultivation might increase the crop of first quality tomatoes. Further experiment on this line of intensive tomato growing seems desirable.

Extension and Development Work of the Departments

17. GREENCASTLE NURSERY AND FRUIT FARM

Cane nurseries for the first multiplication of new varieties and the multiplication of standard varieties were maintained.

Approximate
Acreage

<i>Orchards</i>				
Grafted mangoes (bearing trees)	..	..	..	4.00

Cane cuttings (new varieties)	191,118
Sweet Potato vine cuttings (variety B44)	2,260,000
Elephant Grass cuttings	89,100
Guatemala "	25,000
Vegetable seedlings (tomato, cabbage, onion, etc.)	77,919
Fruit trees (grafted mango, citrus, breadfruit, etc)	337
Useful or Ornamental trees & shrubs	2,359

Cotton seed (from Central Experiment Station Seed Farm)	..	..	..	..	20,058 lbs.
Maize on cob	..	..	..	..	19,303 "
Yams	..	..	..	..	658 "
Peanuts	..	..	..	..	80 "
Pigeon Peas	..	..	..	..	470 "
Cow Peas	..	..	..	..	655 "
Six Weeks Beans	..	..	..	..	413 "

19. SOIL, WATER AND FOREST CONSERVATION

A total of 970 acres were serviced on peasants and estate lands throughout the island by the Department of Agriculture. The services rendered varied from the demarcating of contour lines only and the supervision of the making of bunds etc. (e.g. on privately owned estates) to the entire work of demarcating, bunding, the planting up of bunds, the digging of contour drains, the erection of check dams etc. (e.g. on government owned settlements).

One Mobile Conservation Unit (A Senior Instructor and four skilled labourers) specialised on this work, but much was also done together with their other duties by settlement Instructors.

In addition to the 970 acres taken care of by the Agricultural Department about 336 acres were bunded on the contour by the Antigua Syndicate Estates Ltd.

Although banking along the contour is being fairly well done considerable difficulty is being experienced in getting the peasantry to maintain the bunds.

A forestry protection service was maintained. Forty-one convictions were obtained for breaches of the Forestry Regulations; fines imposed varied from 30/- to 3/-. Breaches of the regulations, are, unfortunately, on the increase.

20. REHABILITATION OF ESTATE AGRICULTURE

Under a section of Colonial Development & Welfare Scheme No. D.465 funds were made available for the assistance of estate agriculture.

The administration of this Scheme is the responsibility of a Committee appointed by His Honour the Administrator of which the Director of Agriculture, Leeward Islands, is Chairman and the Agricultural Superintendent, Antigua, Secretary.

The following issues were made during the year to three parties:—

Sub-head	Loan	Grant	TOTAL
	£	£	£
(a) Purchase of Implements	1,560 0 0	520 0 0	2,080 0 0
(b) Assistance for Improvements	895 0 0	298 0 0	1,193 0 0
(c) Transport & Expansion	—	—	—
(d) Livestock & Dairy	—	—	—
	2,455 0 0	818 0 0	3,273 0 0

Issues to seven parties and repayments from the commencement of the Scheme up to the end of 1948 are as follows:—

Sub-head	Issues			REPAID
	Loan	Grant	Total	
(a) Purchase of Implements	9,127	3,032	12,159	903
(b) Assistance for Improvements	9,443	3,085	12,528	1,944
(c) Transport Expansion	3,650	1,217	4,867	1,002
(d) Livestock & Dairy	1,800	900	2,700	530
Total	24,020	8,234	32,254	4,379

In one case a borrower failed to live up to the conditions of the agreement entered into and was made to refund the loan forthwith.

All other funds have been used to the satisfaction of the Committee and repayments have been made on the due dates.

The loans and grants made under this scheme have assisted very materially towards the creation of one new dairy farm of between 400 and 500 acres, the improvement of two smaller ones, the reclamation of a derelict estate which is now carrying close upon 100 acres of cotton and a herd of cattle, and the extension and improvement of a stock farm which is principally concerned with the production of beef, mutton and mules. Three other concerns have been assisted to buy implements and machinery which have added to both the extent and efficiency of their farming operations.

21. LAND SETTLEMENT AND DEVELOPMENT

Under Colonial Development & Welfare Scheme No. D.282 a Land Settlement and Development Board was set up and provided with funds to buy and develop land for leasing to suitable tenants.

Given below is a list of all the "Settlement" areas with which the Department of Agriculture or/and the Land Settlement and Development Board are concerned.

Settlements	Total Area (acres)	Total Arable Acreage *(Estimated)	Total Acreage occupied	No. of Allotments	Principal Feeder Villages or Town
1. Clare Hall	226	226	226	126	Clare Hall, St. John's, St. Johnston's Village.
2. Skerrets ..	100	—	100	19	St. Johnston's Village
3. Sawcolts ..	233	—	138	70	Sawcolts, Swetes
4. Wallings ..	430	—	134	25	Wallings, Sawcolts
Sub-total A	989		598	240	
5. Piccadilly (approx.)	3,000	—	829	493	English Harbour, Liberta, Falmouth, Bethesda.
6. Matthews ..	729	476	476	126	All Saints, Swetes, Buckleys
7. Jonas ...	261	150	150	73	Freemans, All Saints, Pares
8. Greencastle (1) ..	544	—	467	110	Grays Farm, Grays Hill, Hamilton, St. John's
Sub-total B	4,534		1,922	802	
9. The Folly ..	22	15	15	14	Swetes, The Folly
10. Mannings ..	250	68	67	37	Freetown, Newfield
11. Sherriiffs ..	240	—	—	<	
12. Indian Town	22	—	—	<	
Sub-total C	534		82	51	

* In the absence of a land classification survey, estimates in some cases might be misleading and have been omitted.

< used for communal grazing.

Settlements	Total Area (acres)	Total Arable Acreage *(Estimated)	Total Acreage occu- pied	No. of Allot- ments	Principal Feeder Villages or Town
13. Coconut Hall	257	139	139	67	Parham, Sea- tons
14. Southern Settlements	1,712	500	323	197	Old Road, Ur- lings.
15. Northern Settlements	387	323	291	157	Cedar Grove, St. John's
16. McKinnons	131	131	131	60	St. John's.
17. Rooms	441	—	309	192	Willikies, Sea- tons.
18. Comfort Hall (part of) ..	410				
19. Brecknocks (Unsurveyed)		—	47	38	Sawcolts, Ham- ilton, Grays Farm, Grays Hill, St. John's
20. Belvidere Greencastle (2) ..	1,635	—	781	300	
21. Orange Valley ..	707	200	173	88	Crab Hill, Johnston's Point, Bolans
Sub-Total D	5,680		2,194	1,099	
GRAND TOTAL ..	11,737		4,796	2,192	

* In the absence of a land classification survey, estimates in some cases might be misleading and have been omitted.

Settlements 1—8 are under freehold tenure. Almost all of the land on 1—4 has been alienated. The given number of allotments is that at the time of alienation. Land on 5—8 is in the process of alienation. Settlements 9—21 are under leasehold tenure.

A Land Settlement Board with defined executive powers now assumes responsibility for the administration of all un-alienated settlement areas; the execution of work being done by the staff of the Agricultural Department.

The activities of this section of the Agricultural Department have in the past been concentrated principally on "settlements". Attempts have been made during the year to give more attention to small cultivators elsewhere but this has had to be limited to the numbers of staff available.

For departmental purposes the island continues to be divided into six districts with six Instructors and two Senior Instructors resident in the areas for which they are responsible. One additional Instructor is in charge of a Mobile Soil Conservation Unit.

Buildings

Extensive repairs were effected to a small building at Belvidere and additions including toilet and kitchen made. This building now houses a District Instructor. Accommodation for two settlement horses was also made here.

A large barn at Marble Hill which had become dangerous was pulled down and some of the material used to erect a small out-building, and a settlement shelter and to effect minor repairs to the main building.

Minor maintenance work was done to all settlement buildings as required.

Water Supplies

On spots indicated by a water diviner wells were dug at Cades Bay, Orange Valley and Rooms. In all three cases water was found at about 30 ft.

Total soluble chlorides in parts per million ascertained by titration against Silver Nitrate were as follows :—

	Date when samples taken			
	3.12.48	7.1.49	12.1.49	17.1.49
1. Orange Valley	981	998		
2. Rooms			1,100	
3. Cades Bay				3,428

These analyses indicate that the water in all three wells can safely be used for the watering of all kinds of stock and in the first two cases might be suitable for regular human consumption.

In addition to the above a well, also yielding (at about 30 ft.) water suitable for stock, was dug at Christian Hill, lined and cased.

Both dams at Piccadilly were cleaned and extensive repairs done to the lower one.

Roads

Minor repairs were done to settlement roads and main "barricades" as required.

Tractor Ploughing

242.80 acres were ploughed for 145 tenants on five settlement areas. Plans for the extension of this service are under consideration. In the meantime most of the ploughing is done on the heavier soil types where hand forking and banking is difficult.

Settlement Committees

A committee was formed at Belvidere and Greencastle (2) bringing the total at the end of the year to seven. These committees continue to be elected by settlers at general meetings and to function for a period of about one year in an advisory capacity to the Department.

22. CREDIT FACILITIES

Loans as in previous years are recommended and resulting work carefully supervised by field officers. Issues and collections are made by the Marketing Section.

General agricultural loans and loans for tractor ploughing are issued (often in instalments) on the basis of work done under the supervision of the staff. Fertilizer loans are given in kind.

Ordinary loans are secured by first liens on crops marketable through the Marketing Section. A first lien on a cotton crop is not generally acceptable owing to the ease with which this crop can be sold to buyers other than the Marketing Section.

An experiment in cooperation aimed at enabling loans to be issued for cotton cultivation was started during 1947 in the Piccadilly district. Collective security amounting to \$317.42 in cash was offered by 94 cultivators. Cash was obtained by selling 10/- shares each one of which entitled the holder to a Government loan not in excess of £5 on the basis of work done and vouched for by elected Group leaders and the District Instructor. Results have been disappointing. Of \$3,246.98 loaned, only \$1,223.00 was repaid when due. Owing to the severity of the drought and low yields this in itself was not the disappointing feature. Many of the group members, however, who were in a position to pay deliberately defaulted by selling their cotton elsewhere than to the Marketing Section.

Of the 94 members of the group, 20 met their financial obligations in full, 37 paid part of the amounts due and 37 made no payments whatsoever.

Legal action against deliberate defaulters will be taken before any confiscation by Government of the collective security (which proved to be inadequate) available. It is hoped, however, that defaulters will meet their obligations during the 1948—1949 season.

This experiment has been useful in indicating those who can form a nucleus for further co-operative efforts.

23. MARKETING

The principal activities of this section i.e. the marketing of peasants' canes and the issuing and collection of loans were maintained.

Also, in addition to exercising supervision over the purchasing, handling, ginning and shipping of the entire cotton crop the section continued to offer facilities to peasants for the marketing of their crop on a co-operative basis.

Efforts to maintain a market for tomatoes in Trinidad met with only slight success. Although excellent reports were received as to the quality of the fruit, shipping arrangements were unsatisfactory and demand uncertain.

Cane

In spite of greatly reduced yields owing to the prolonged droughts a total of 10,979 tons were handled as compared with 8,008 in 1946 and 14,448 in 1947.

The districts concerned, the weights from each and the gross proceeds are given in the following table:—

TABLE XXVI

District	Tonnage			Gross Proceeds
				\$
Golden Grove	147	0	0	1,260.30
Cades Bay	33	18	0	322.34
Greencastle 1	2,143	19	0	20,519.46
Greencastle 2	459	4	1	4,046.13
Orange Valley	481	8	1	3,936.81
Belvidere	3,672	7	1	28,376.05
Folly	113	2	0	884.72
Jonas	914	14	2	8,499.34
Piccadilly	1	9	0	179.78
Sawcolts	220	15	3	1,842.81
Matthews	1,195	16	2	11,228.46
Mill Hill	274	10	1	2,292.41
Clare Hall	467	4	1	4,783.97
Mannings				68.15
Marble Hill & Tom Gilead ..	690	14	0	6,238.64
Rooms & Comfort Hall ..	29	3	3	354.81
Cocoonut Hall	134	13	0	1,647.98
	10,979	19	3	96,482.16

Note:— *Includes bonus on the 1947 crop paid in 1948.

Group marketing with the use of siding scales was carried out at Clare Hall and Matthews. The use of the Marble Hill scale was held up pending alterations which would enable trucks to be accommodated on the platform.

Cotton

64,608 lbs. of clean seed cotton (about 2/7 of the island's crop) and 1,822 lbs. of stained seed cotton were purchased at four centres, 3 in rural districts and one in St. John's. A first payment of 12c. per lb. clean seed cotton was made and after all expenses deducted a final payment of 5.8c. was effected.

Stained seed cotton was purchased outright at 3c. per lb.

22,572 lbs. of clean lint (34.9%) and 503 lbs. stains (25.4%) resulted.

Fruit, Vegetables, Seed and Insecticides

This sub-section was kept functioning continually with a minimum of staff to maintain certain essential services, e.g. retailing of seeds, insecticides, etc. For this reason suggestions that the subsection should only function intermittently when there was sufficient produce for export or storage were not implemented.

Retailing of locally grown produce under the conditions that obtain is often not possible as growers only bring produce for sale at the minimum price when the market is glutted and they are unable to sell elsewhere at higher prices. Some retailing is however done from time to time but losses can only be avoided by watching market conditions very carefully.

During the year 10,800 lbs. miscellaneous vegetables (chiefly tomatoes and cabbages) and 19,299 fruit (chiefly citrus and Julie mangoes) were purchased and re-sold. 1,200 lbs. of the tomatoes were shipped to Trinidad.

For the second consecutive year direct revenue exceeds direct expenditure. The excess amounted to \$147.24 as against \$53.22 in 1947

The following insecticides were retailed:—

Lead arsenate	3,548 lbs.
Karoga (a 6% D.D.T. dust)	1,023
DDT (granular)	300
DDT — Benzol Emulsion	11 gallons

39,262 lbs. of cotton seed, 3,429 lbs. maize seed (on cob), and 203 lbs. of miscellaneous imported vegetable garden seed were sold.

Insecticides and seed were sold at prices sufficient to cover cost and expenses.

24. DEMONSTRATION PLOTS, STUDS CENTRES ETC.

Red Poll Senegal bulls originating from the Central Experiment Station are on service at Cades Bay and Piccadilly. The output of bulls from this Station for use on the settlements will increase from year to year.

Large Black boars are kept at stud at Clare Hall and Cades Bay.

A Duroc-Jersey boar presented to the Department in 1917 by A. J. Garcia Esq. of the Dantzler Lumber & Export Co., Tampa, Florida, through Messrs. Brown & Co. Ltd., is kept at stud at Piccadilly.

A British Alpine buck was kept at Clare Hall and a Black Head Persian ram at Cades Bay.

A revolving herd of cattle, now numbering 22, was maintained during the year. These animals are on loan or kept available for loan to selected peasants who will plant sufficient fodder grass and provide shelter for stall-feeding. The animal becomes the property of the borrower when two full-grown calves from the animals loaned are returned to the Department.

In addition to the animals mentioned above seven brood mares are maintained on the settlements for use principally as riding mares.

Following is a list of recorded services in Antigua other than to animals within the Department:—

Bull	..	..	..	51
Boar	..	..	..	192
Sheep	..	..	..	70
Goat	..	..	..	10

In addition, free stud services were provided in Barbuda. Four stallions, one jack and one ram were kept stabled. Stallions are used regularly also as riding animals.

Recorded services are as follows:—

Jack for mule breeding	..	..	69
Stallions	..	..	4
Ram	..	..	34

In addition to the above another jack and two bulls were allowed to run in the communal paddocks and pastures.

25. AGRICULTURAL SHOWS ETC.

An Agricultural Exhibition was held in Barbuda under the auspices of the Barbuda Agricultural Society.

Four cinema shows were held on settlements jointly by the Departments of Education and Agriculture. Educational films with a strong agricultural bias were shown.

Extension of these shows was retarded owing to the difficulty of obtaining suitable equipment and films.

In addition to what has been referred to elsewhere in this report information was disseminated through the Agricultural and Commercial Society and by informal talks to Settlement Committees and general meetings of peasant settlers.

Notes on the activities of the Department were published in the local press.

ST. KITTS-NEVIS

26. EXTENSION WORK

In St. Kitts there are one senior agricultural instructor and two junior instructors. The post of one junior instructor remained vacant for eight months of the year as a suitable candidate could not be found to fill the vacancy which was caused by the resignation of one of the instructors at the end of April.

The instructors live on Government land settlement estates and up to the present they have worked chiefly among the allottees on these estates. There is much useful work that could be done by the instructors among the labourers who cultivate ground provisions and green vegetables, on a share basis, on the upper lands of the estates. However, previous attempts by these officers to give advice for the improvement of the present methods of cultivation have

not been very successful as the cultivators state that they are unwilling to adopt any recommendations regarding soil conservation and other matters until they have some security of tenure for the lands which they occupy.

On Government settlements the instructors have given advice on soil conservation, cultivation and manuring of the sugar cane crop and have encouraged the cultivation of groundnuts and green vegetables. They have also arranged for supplies of vegetable seedlings.

In Nevis there are one senior agricultural instructor and four junior instructors. These officers live on Government land settlement estates and each officer is responsible for advisory work among the peasantry in a district of the island.

In Anguilla there is one senior agricultural instructor. This officer is in charge of an agricultural station and stud centre and is responsible for agricultural advice to peasants in all districts of the island.

27. DISTRIBUTION OF PLANTING MATERIAL

Some 600 lbs. of vegetable seeds were imported from the U.S.A., the United Kingdom and Teneriffe for sale to growers. The value of these was \$1,180.00.

The following planting material was distributed from the experimental stations in St. Kitts and Nevis:—

Vegetable seedlings	.. .. .	631,000
Cane cutting (new varieties)	.. .. .	20,000
Elephant Grass	.. .. .	10,000
Sour Grass	.. .. .	6 bags
Molasses Grass	.. .. .	1 bag
Antigua Hay Grass	.. .. .	4 bags
Ornamental trees and plants	.. .. .	184
Papaw Plants	.. .. .	41
Grafted mango plants	.. .. .	14
Grafted pear plants	.. .. .	3
Lime plants	.. .. .	4
Garden Grape plants	.. .. .	5
Guava plants	.. .. .	2
Breadfruit plants	.. .. .	1
Maize seed	.. .. .	250 lbs.
Peas and Beans	.. .. .	270 ..

The Department supervises the hand picking and distribution of cotton seed for planting in St. Kitts and Nevis.

Cotton Seed Multiplication

The multiplication of Pedigree cotton seed which is supplied to the Department annually by the cotton station in Montserrat, was continued. In St. Kitts 150 lbs. of pedigree seed is used to plant seven acres of land at La Guerite and the seed obtained from this area is planted the following year on one or two estates. Seed from the multiplication plots on estates is used to plant the island's cotton crop of the next year. The crop of the island is therefore planted with seed three generations removed from the progeny rows of M.S.I. cotton in Montserrat. Unless there is crop failure of the multiplication plots on estates this system works satisfactorily and regular seed renewal is ensured. From the 1948 multiplication plot at La Guerite 1,800 lbs. of hand picked seed was available for planting the 1949 multiplication plots on estates.

Some 300 lbs. of pedigree seed is received each year from the cotton station in Montserrat for multiplication in Nevis. In 1948 this seed was planted at the Prospect experiment station and at New River. In addition 20 acres were planted at New River with seed from the multiplication plot at La Guerite which it had not been possible to use in St. Kitts as a result of the strike on estates early in the year. The present position of the seed renewal system in Nevis is not satisfactory and it has been necessary to use each season a fair quantity of seed which is more than three generations removed from the progeny rows in Montserrat for planting the island's crop. The importation of sufficient seed each year for planting the whole of the island's crop is contemplated until the seed renewal system can be organized on a satisfactory basis.

28. SOIL AND FOREST CONSERVATION

For checking soil erosion 52,000 feet of bund were constructed during the year on the three Government settlement estates Fahies, Sadlers and Harris in St. Kitts. The bunds were planted entirely with khus-khus grass. Any of the bunds which have been established in earlier years and which may have been damaged by careless cultivation were repaired.

Six estates were given assistance with contouring of sugar cane lands and approximately 180 acres were contoured. On many estates the management has provided road tracers for the use of their overseers for soil conservation work. However, much soil conservation work is needed on the upper lands of estates where the labourers cultivate ground provisions and vegetables on a share basis.

In Nevis approximately 44 acres were contoured and bunded on Government settlement estates during the year bringing the total area on which soil conservation measures have been taken to 583 acres.

29. LAND SETTLEMENT

ST. KITTS

In St. Kitts there are three Government estates which are under the control of the Agricultural Department and which are cultivated by peasants. Details of the settlements at Fahies, Sadlers and Harris are set out below.

	<i>Fahies</i>	<i>Sadlers</i>	<i>Harris</i>
Date of purchase	1939	1939	1939
Location	North-West	North-east	North-east (adjoins Sad- lers)
Total acreage, acres ..	307	457	207
Arable acreage, acres ..	180	263	145
Purchase price	£4,500	£5,000	£6,500
Value of buildings etc. at time of purchase ..	£ 100	nil	£1,550
Govt.'s share of cane crop at time of purchase ..	—	—	£ 295
Price per arable acre ..	£ 24	£ 19	£ 32
Size of allotment, approx.	3 acres	3 acres	3 acres
Distribution of allotment	In one block on lower or higher land.	2 acres lower land & 1 acre upper land.	2 acres lower land & 1 acre upper land.
Number of allottees ..	59	73	37
Additional acreage rented in small plots for food crops	nil	44 acres	29 acres
System of tenure	Short term lease	Rental	Rental
Rental charges	25/-, 20/- and 15/- per acre per annum.	25/- & 15/- per acre per annum.	25/ & 15/- per acre per annum.
Present capital value of estate, approx. ..	£6,000	£8,000	*
Average rental receipts per annum	£ 182	£ 270	*
Contribution towards cost of supervision and up- keep of roads, per an- num	£ 85	£ 85	*

(* figures not yet available)

HISTORY OF THE ESTATES

Fahies

For the six years previous to the purchase of the property by Government Fahies had been cultivated by peasants on a share basis with the owner in ground provisions, chiefly sweet potatoes and cassava. In 1933, 34 acres of sugar cane were grown on the estate and the yield per acre (as recorded in a statement published by the St. Kitts (Basseterre) Sugar Factory Ltd.) was 3.45 tons. During the ten years previous to 1933 approximately 30 acres of sugar cane were cultivated and the average yield as recorded in statements issued by the sugar factory was 9.18 tons per acre. These figures indicate that for the 17 years previous to its purchase by Government the estate was being worked with practically no attention to manuring or to proper methods of cultivation and that the lands had reached a very low state of fertility.

Sadlers

The owner of this estate lived abroad for many years and the property was leased to the owner of Bellevue estate which adjoins Sadlers. When purchased by Government the lands of Sadlers were in a very impoverished condition as they had been cropped continuously to sugar cane, cotton and ground provisions for several years with little manuring and no soil conservation measures. Much of the top soil has been lost and it will take several years to restore the fertility of the land.

Harris

This estate was share cropped to sugar cane for many years (1/3 share of produce for the owner and 2/3 share for the cultivator). Some animal manure was used and small application of sulphate of ammonia. In 1946, 57 acres of sugar cane were reaped and yielded 16 tons cane per acre. The crop was cultivated by three tenants. Ground provisions were cultivated on the higher lands. No soil conservation measures were adopted.

SOIL AND RAINFALL

Fahies

The soil of the lower lands of this estate is light and contains 18 per cent of silt and clay. On the southern section of the estate the soil is heavier and contains 42 per cent of silt and clay. All the land is free draining and there are no drainage problems but haulage difficulties sometimes arise on the southern section during rainy weather.

The rainfall is good and averages from 60 to 70 inches per annum.

Sadlers

The soil is light and some sections of the estate are stony. Soil of the arable land contains from 10 to 18 per cent of silt and clay.

For the five year period 1943-47 the average rainfall is 50 inches. For 1943 which was a wet year 69 inches were recorded. Drying winds from east to north-east prevail for several months of the year.

Harris

This estate adjoins Sadlers and the rainfall of the two properties should be about the same. Rainfall records have now been started. Some of the land is very stony and there has been much soil erosion.

SOIL CONSERVATION

Fahies

This estate was surveyed and sub-divided into 3 acre plots by a licensed surveyor from August to November, 1939. In 1943 the contouring of the estate was started by officers of the department and lines were put through the estate at 12 feet vertical intervals. These permanent lines are all bundled with khus-khus grass. Temporary lines, with widely spaced bunches of grass, are put in at 6 feet vertical intervals as guides to assist the cultivators in keeping their cultivation on the contour.

Sadlers

A contour survey of this estate was made by a Licensed surveyor at a cost of £1.289. Permanent bunds of khus-khus grass at 10 feet vertical inter-

vals have been put in by officers of the department as well as temporary lines at 5 feet vertical intervals. On this estate the majority of the plots occupy a single contour.

Harris

This estate has not been surveyed. The officers of the department have contoured and bunded it with khus-khus grass at 10 feet vertical intervals. The contour lines run contiguous with those of Sadlers.

Allottees

The average age of the allottees on the three estates is from 30 to 50 years. The younger men do not seem very keen on cultivation of the land. The majority of the allottees at Fahies live in Sandy Point about two miles away. Most of the allottees at Sadlers and Harris live in the Sadlers and Harris villages which are situated at the lower levels of the estates. Three allottees at Fahies have houses on their plots. About 50 per cent of the allottees at Fahies and Sadlers obtain employment on estates during the harvesting of the cane crop. The others work entirely on their plots.

Crops

Allottees are permitted to harvest sugar cane from only half the area of their allotments for each crop. Other crops grown are sweet potatoes, yams, tannias, eddoes, groundnuts, peas and beans and green vegetables.

Manuring

The Department has not been very successful in getting field pens erected and animals penned on the plots for making manure. A few allottees make up manure by feeding animals at stake on their plots. Several allottees bring a fair amount of animal manure to Fahies from Sandy Point and fair amounts are taken from Sadlers and Harris villages to the allotments on these estates. Filter press mud and megasse are also used. The sugar cane crop is given dressings of sulphate of ammonia and muriate of potash to the plant canes and sulphate of ammonia to the ratoons.

Marketing and Credit Facilities

The marketing of the sugar cane crop on the three settlements is organised by the department. The cane is sold to the St. Kitts (Basseterre) Sugar Factory and the factory deals solely with the Government and not with individual peasants. Allottees receive for their canes the same price as that paid to contracting estates.

Allottees on the three estates are supplied with artificial manures, planting material, agricultural tools, calves from Bayfords farm on a credit basis. Deductions for these credits are made from proceeds of sales of cane and amounts outstanding for rents are also deducted. The amounts due for artificial manures are deducted from the proceeds of the crop on which the manure is used.

The senior agricultural instructor is responsible for keeping of accounts for the three settlements.

1948 Cane Crop

2,980 tons of cane were produced at Fahies for the 1948 crop with a yield of 33.86 tons cane per acre as against 27.85 tons per acre for the previous crop. The yield of cane at Sadlers was only 13.44 tons per acre as against 17.59 tons per acre for the 1947 crop. The crop at Sadlers dried out badly and much of it was eaten by the allottees during the long strike in the early part of the year. A statement of receipts and expenditure in connection with the marketing of the crop is published as Appendix VI to this report.

NEVIS

In the table below are shown the land settlement estates, the number of available plots on each settlement and the number occupied, the size of holding and the rental value, in the island of Nevis.

Settlement.	Total No. of allotments		Number occupied		Size of holding.	Rent per acre
	Free- hold.	Lease hold.	Free- hold.	Lease- hold.		
Hamilton ..	124	76	124	46	3 acres.	10/- to 12/-
Low Ground ..	73	7	73	5	3 acres	10/- to 12/-
Prospect ..		44		26	4 acres	12/-
Cades Bay ..		38		37	3 acres	12/-
Nisbetts ..		27		27	1, 2 and 3 acres.	10/- to 16/-
Hardtimes ..		29		28	3 acres	12/-
Spring Hill ..		32		—	3 acres	
New River ..		224		224	$\frac{3}{4}$ acre.	15/-
The Valley ..		25		23	$\frac{3}{4}$ acre.	8/-
Maddens ..		216		216	1 acre.	15/-

16 plots too steep for cultivation.

7 plots reserved by Government.

7 plots vacant.

With the exception of Spring Hill all suitable land on the settlements is occupied and many of the allottees make good use of their holdings. At Prospect the tenants use the greater part of their plots for the grazing of livestock which makes the collection of arrears of rents a difficult matter on this settlement.

The following figures show the total indebtedness of the allottees on each settlement on account of rents and/or instalments.

Total Amount of Indebtedness to Government

Settlement	As at Dec. 31st., 1947			As at Dec. 31st., 1948			Increase.			Decrease.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Hamilton ..	628	10	0 $\frac{1}{2}$	411	19	3 $\frac{1}{2}$				216	10	9
Low Ground ..	301	5	0 $\frac{1}{2}$	198	5	3 $\frac{1}{2}$				102	19	9
Prospect ..	126	5	4 $\frac{1}{2}$	127	19	8	1	14	3 $\frac{1}{2}$			
Cades Bay ..	123	19	2	118	16	9				5	2	5
Nisbetts ..	53	4	0	46	4	4				6	19	8
Hardtimes ..	40	11	2	47	11	10 $\frac{1}{2}$	7	0	8 $\frac{1}{2}$			
New River ..	95	19	6 $\frac{1}{2}$	108	0	8 $\frac{1}{2}$	12	1	2			
Spring Hill ..	11	8	10 $\frac{1}{2}$	9	6	2				2	2	8 $\frac{1}{2}$
The Valley ..	7	6	0	9	6	6 $\frac{1}{2}$	2	0	6 $\frac{1}{2}$			
Low Ground pasturage ..	4	5	10 $\frac{1}{2}$	3	6	8				19	2 $\frac{1}{2}$	
Stoney Grove Pasturage ..	6	11	6	12	0					5	19	6
	1,399	6	7	1,081	9	3 $\frac{1}{2}$	22	16	8 $\frac{1}{2}$	340	14	0

The figures show substantial decreases of indebtedness of the allottees at Hamilton and Low Ground. These decreases are the result of exemplary evictions of defaulters during the year.

SETTLEMENT OF EX-SERVICE MEN ON THE LAND

The plan of the Government to settle ex-service men on the land at Harris settlement in St. Kitts and on various settlements in Nevis has proved a failure with one exception. One ex-service man who has been given a five acre allotment at Harris is cultivating his holding satisfactorily and will receive financial assistance from Government early in 1949 for the erection of a house on the holding.

On the 31st December, 1948, the total indebtedness to Government of the men who were given land in St. Kitts was \$631.30 and \$5,291.35 of the men who received allotments on settlements in Nevis. While it is expected that the amount outstanding in St. Kitts will be recovered within a reasonable period of time it does not appear at present that Government will be able to recover the sums which were advanced to ex-service men for the cultivation of land in Nevis.

30. MARKETING AND CREDIT FACILITIES

ST. KITTS

There is no marketing department in St. Kitts and the allottees' cane crops on Government land settlement estates are marketed by the agricultural instructors assisted by the rangers. These officers make the necessary arrangements for the cutting, haulage and packing on factory trucks. Credit facilities for manures, tools, and planting material are also arranged by the instructors. The senior instructor is responsible for keeping the ledgers in connection with marketing and credit transactions on the settlements.

For the 1948 season 4,136 tons of cane were marketed for the allottees at Fahies and Sadlers. The final payment for the crop was not made by the St. Kitts (Basseterre) Sugar Factory until January, 1949. The total amount received for the cane crop on both estates was \$34,679.30 and the amount which was received by allottees for cane put at the factory siding and packed in railway trucks was \$25,216.08. A statement of receipts and expenditure is published as Appendix VII to this section.

NEVIS

In Nevis the Marketing Department marketed cotton, sugar cane and maize for peasant cultivators and provided credit facilities for insecticides, artificial manures and planting material. Cash loans up to £3 for cane cultivation were granted to approved allottees on Government settlements.

The total receipts from sales of clean and stained cotton lint and cotton seed amounted to \$145,990.62 and marketing expenses to \$20,431.90. Statements of receipts and expenditure in connection with the marketing of clean and stained cotton are published as appendices VIII and IX to this section.

The Marketing Officer is also responsible for the operation of the government ginnery. Major alterations, as suggested in the Briggs' report, have been made in the lay out of the ginnery and a new pump for the baling press was installed at a cost of \$1,680. For the 1948 season 193,435 lbs. clean lint and 53,347 lbs. stained lint were ginned. Receipts amounted to \$9,909.41 and expenditure (excluding cost of management, supervision, depreciation etc.) to \$6,171.85.

31. PROCESSING PLANTS OPERATED UNDER THE SUPERVISION OF THE DEPARTMENT

In St. Kitts Government has at La Guerite a corn sheller, Hess drier and mill for processing corn. This plant has never been operated at full capacity and in 1948 only 34,870 lbs. of corn was processed. Of this amount 12,080 lbs. cob corn was imported from Montserrat and 8,866 lbs. shelled corn from Trinidad.

In Nevis a corn mill is operated at Hardtimes settlement for the preparation of cornmeal from corn brought in by peasants.

At the muscovado sugar works on the Hamilton and New River settlements approximately 2, 100 tons of cane were crushed and 150 tons muscovado sugar manufactured for local consumption. Government funds are used for the operation of these plants and sums expended are recovered from processing charges.

32. STUD ANIMALS ON GOVERNMENT SETTLEMENTS

ST. KITTS

One $\frac{3}{4}$ Holstein-Zebu and one grade Holstein-Zebu bull, two pure bred Berkshire boars and one grade Black Head Persian ram sheep are maintained on the settlements. The services by these animals for the year are given below.

Bulls	..	..	..	..	16
Boars	..	..	..	..	43
Ram	..	..	..	..	9

The grade bull was sold in October and one boar was available for service only from August. Two $\frac{1}{2}$ bred Holstein-Zebu bulls from the Bayfords farm will soon be ready for use on the settlements.

NEVIS

Six stud centres are maintained in Nevis and the following services were recorded for the animals during the year :

		<i>Services</i>
1 Stallion	French-Canadian	nil
5 Bulls	4 Grade Zebu and 1 Grade Holstein	110
3 Jack Donkeys	.....	11
2 Ram Sheep	Grade Black Head Persian	54
2 Buck Goats	1 British Alpine	53

During the Anthrax quarantine the Government animals were not allowed to serve and this accounts for the small number of services during the year. The Large, Black and Duroc-Jersey boars, which were maintained in last year's report, are being replaced with Berkshire boars.

A pure bred Berkshire boar was on service at the Agricultural Station from October and a grade Zebu bull is being sent to the station early in 1949.

33. VETERINARY SERVICES

The Colonial Development and Welfare Scheme D.422 provided funds for the establishment of a veterinary panel service in 1945. As reported last year, the panel system proved unworkable and closed at the end of 1947. During 1948 funds allocated under the scheme were used to defray the cost of providing a general veterinary service for the whole presidency, instead of a panel service for St. Kitts only. In view of the outbreaks of Anthrax in Nevis and St. Kitts, to which reference has already been made, it was indeed fortunate that the services of a Government veterinary officer were available. The outbreaks might well have spread further and lasted longer but for the prompt measures which were taken by the Veterinary Officer, assisted by the Chief Veterinary Officer.

34. GROVE BOTANIC STATION

MONTSERRAT

Grove Botanic Station was used for the demonstration of soil conservation measures, for observation plots of various crops and as a source of supply of planting material. Planting material distributed from the Station during the year included:—

Budded Lime trees ..	..	..	308
Budded Orange trees ..	..	..	74
Grafted Mango trees ..	..	..	39
Decorative plants ..	..	..	545
Sugar cane cuttings ..	..	..	12,940
Onion seedlings ..	..	..	17,000
Tomato seedlings ..	..	..	74,660
Red Bombay Onion seed ..	..	..	10 lbs.

35. BRADES INVESTIGATION AND STUD CENTRE

The greater part of the 10 acres of the Brades Centre is established in contour strips of elephant grass, other fodder grasses and some food crops. These

provide fodder for the livestock at the Centre, a small amount of planting material for distribution and a demonstration of strip cropping. The site of this Centre was chosen with a view to investigating methods of building up the impoverished soils of the district. Soil conservation work on the Centre has checked erosion, and the cover of fodder grasses may have checked the decline in soil fertility, but no improvement regarding soil fertility can be recorded, and further investigation is planned.

36. SOIL, WATER AND FOREST CONSERVATION

Some further progress was made on both estate and peasant lands in contour bunding, but the rate of advance is slow.

It is estimated from figures kindly supplied by estates that some 57,000 feet of timber of the better species such as red cedar, white cedar and sweet wood were cut for boards, scantlings, etc., during the year. Most of it was used in the island for house building and repairs. Some was used for furniture making and a small quantity of red cedar was exported. In addition to this, 90,000 red cedar and sweet wood shingles were made, all for use locally.

The value of the 57,000 feet of timber as boards together with that of the 90,000 shingles is calculated to amount to some \$15,500 a figure which does not include the value of the very considerable amount of timber of the poorer species cut and used for building kitchens, fencing and so on or the value of the large quantities of charcoal burned and used in the island.

The above figures emphasize that the forests of Montserrat are not without direct monetary value, although their value in protecting agricultural land from erosion, as windbreaks and in conserving water is, of course, greater. There is little doubt that by the general adoption throughout the island of the elementary principles of forest and woodlot management got these values would be enhanced.

There were five convictions for contraventions of the forest regulations during the year.

37. OTWAY PEASANT LAND SETTLEMENT

The year 1948 was the fourth year of the Otway Peasant Land Settlement, which was established under Colonial Development and Welfare Scheme No. D.666.

During the year 288 allottees rented 380 acres of "cotton holdings", i.e. holdings between sea level and an altitude of something like 700 feet. On these "cotton holdings" a crop rotation on the basis of five-eighths cotton, one-quarter soil restorative crops and one-eighth food crops is generally encouraged by the Department.

Many of the allottees also rented "provision holdings", i.e. holdings suitable for provision crops at altitudes too high to be suitable for cotton. During the year 166 allottees rented 150 acres of "provision holdings".

The greater part of the "cotton holdings" area was contoured during the first two years or so of the Settlement, and the terracing and slope reducing effects of this work can now be seen and appreciated. Continuation of this work proceeds slowly. As pigeon peas, originally planted as soil conserving barriers, die out they are generally replaced by Guinea grass barriers. There is also a strong tendency towards replacing vetiver grass barriers by Guinea grass barriers, allottees being glad to get Guinea grass as food for their livestock.

The keeping of livestock is encouraged. Some of the allottees are quite alive to the value of dressings of pen manure, but there is plenty of scope for the spread of this desirable practice. The Large Black pigs kept by the Department at the Settlement appear to be having an improving effect on the standard of pigs owned by allottees.

Much extension work is done on the Settlement, and the aims of this work may be indicated by the following list of points used for judging in a Prize Holdings Scheme run during the year :—

	<i>Maximum Points</i>
(a) Condition of Cotton Crops	12
(b) Condition of Food Crops	12
(c) Condition of Food Restorative Crops ..	12
(d) Completeness of Crop Rotation (five-eighths cotton, one-quarter soil restorative crops, one- eighth food crops)	16
(e) Effectiveness of Strip Cropping	6
(f) Maintenance of Soil Conservation Barriers ..	16
(g) Preparation and use of Pen Manure	10
(h) Condition and Suitability and Management of Livestock on Holding	16
Total	100

Ten prizes were given. The "Best Holding on the Settlement" was awarded 73 points out of a possible 100.

Weather during the year was generally favourable to crop production. The year's rainfall at Amersham was 73.94 inches. Food crop production by allottees on "cotton holdings" and "provision holdings" continued throughout the year, and there must have been some useful surpluses for sale after home needs had been met. A large proportion of the tomatoes shipped by the Government Marketing Depot in its small first post-war tomato season was purchased from allottees.

The year 1948 gave the first favourable cotton season since the Settlement started.

At Parsons Ginnery on the Settlement, the Agricultural Department bought 209,890 lbs. of clean seed cotton, and from this ginned and shipped to the Raw Cotton Commission 62,330 lbs. (176 bales) of clean lint.

The 20 acres still retained for the use of the Agricultural Department (the Central Farm having been discontinued after the 1947 cotton season) was used for experimental and nursery work and for the production of food for the Department's livestock kept at the Settlement. A fair crop of limes was harvested from the lime orchard.

38. MARKETING AND CREDIT FACILITIES

Tomatoes

During the season February to May the Government Marketing Depot made a small post-war beginning with the shipment of tomatoes. The Department's packing house in Plymouth was not available, so, much of the tomato crop being grown on the Settlement, a building on the Settlement was used as a packing house.

The quantities of tomatoes shipped by the Government Marketing Depot, together with a summary of expenses and returns are set forth in Table XXVII.

TABLE XXVII
TOMATO EXPORTS: MONTserrat

Destinations	Number of 20-lb crates	Expenses per crate	Net Receipts per crate	Gross Receipts per crate
Canada**		\$ c.	\$ c.	
St. John	818	.46	2.39	2.85
Halifax	467	.46	2.20	2.66
Barbados				
Refrigerated shipping .	487	1.26	1.04	2.30
Per "Moneka"	50	.59	1.71	2.30
Trinidad	50	1.27	.50	1.77
All Markets	1,872			

** Freight by Consignee.

Total payments to growers amounted to 9.0 cents per lb. of tomatoes purchased at the Packing House. Conditions were somewhat abnormal. Growers benefited by the use of old stocks of packing materials bought at pre-war prices, and Canadian import restrictions were responsible for giving the West Indies a market largely free of competition. On the other hand shipping facilities had not yet returned even to pre-war frequency and regularity.

During the months following the tomato season fears of restrictions in Canada so rigid that the importation of even Montserrat tomatoes would have been prohibited lead to a good deal of correspondence. By the end of the year, however, it was seen that not only did these fears not materialize, but that all restrictions were removed, and the Canadian market for tomatoes was open to all countries.

Huckster Trade and Private Shippers

The huckster trade and private shippers handled the export of considerable quantities of vegetables and provision crops, especially to West Indian markets. Legislation making possible the control of such exports remained in existence, but supplies available were such that it was not often necessary to refuse permits to ship.

Packing Materials

The remainder of the Government Marketing Depot's pre-war stocks of 20-lb. tomato crates were used up during the 1948 season. In response to requests from the Canadian tomato buyers it was decided to use 30-lb. crates in future. Quotations and samples of this type of crate were obtained, and supplies of these and other packing materials were imported and kept in stock.

Government Cold Storage Depot

The Cold Storage Depot was operated by the Agricultural Department throughout the year for the manufacture of ice and the cool storage of meat and fish for local use. With resumption of exports to Canada the Cold Storage was used for tomatoes awaiting shipment. Carrots for export were also cool stored.

It was found during the year that serious decay had set in in the fabric of the ceilings of some of the cool chambers, a condition which gives cause for some anxiety.

The usual running repairs to machinery, and painting were carried out.

Vegetable Seeds

The Government Marketing Depot imported and retailed vegetable seeds.

Corn Mill

At the Government Corn Mill about 30 tons of corn were ground or cracked for private individuals and about 7 tons for Government departments.

Advances to Allottees

At the Otway Peasant Land Settlement the Department made advances to allottees while they were cultivating their cotton crop, recovering the money advanced from payments for seed cotton.

Inspection of Seed Cotton and Shipment of Lint

At the request of the Montserrat Cotton Growers Association the Department maintained throughout the season a system for the inspection of all seed cotton before purchase or ginning. At the height of the season three full-time and one half-time Seed Cotton Inspectors were employed. It is generally considered that the inspection did a good deal of effective work.

The Department again attended to the preparation of shipping documents, the accounting and the disbursement of payments in connection with the shipment of the island's crop of clean cotton lint to the Raw Cotton Commission. There were in 1948 three shipments of cotton, there were 71 vendors, the cotton was paid for at five different prices according to grading, each shipment was paid for in two instalments, and the necessary deductions in respect of export duty, cess, jetty rate, grading charge and supervision fee had to be made. An experienced officer was employed part-time to help with the laborious and somewhat complex accounting.

Vendors were charged a supervision fee of one-half of one per cent of their gross proceeds in return for these services.

39. STUD CENTRES

At the close of the year the Department owned the following livestock :—

At the Brades Stud Centre

Bull, Zebu, Webbe
Boar, Large Black, Roger
Boar, Large Black, Roland
Sow, Large Black, Margaret
Sow, Large Black, Pearl
West African Ram Sheep, George

At the Otway Peasant Land Settlement

Bull, Zebu-Holstein, Nelson
Bull, Zebu, Montgomery
Cow, Zebu, Alice
Bull calf, Zebu
Heifer, Zebu, Margaret Rose
Jack, Johnnie
Boar, Large Black, Juno
Boar, Berkshire, Bayford Mac I
Sow, Berkshire, Bayford Belle
Boar piglet, Berkshire
West African Ram Sheep, Tom
Two working donkeys.

Services by the stud animals for the year were as follows :—

Bulls	Boars	Ram Sheep	Jack
59	60	35	12

Twelve Large Black piglets and five Berkshire piglets were raised at the Department's Centres and distributed, usually sold, to peasants and others most likely to use them for the improvement of the standard of pigs in the Presidency. The strain of Berkshire pigs has proved rather disappointing; these pigs do not grow as fast as the Large Black, and even when full grown are still rather small.

40. EXTENSION SERVICES

In addition to what has been referred to elsewhere in this report Agricultural Instructors and other officers of the Department spent much time on the "follow-up" of the progenies of the Department's stud animals, in assisting planters and peasants in carrying out soil conservation measures, in pressing for food production and so on. So far as is possible the Agricultural Superintendent and all officers engaged in extension work confer at headquarters every Saturday morning.

41. METEOROLOGICAL AND SEISMO-VOLCANOLOGICAL

The Department carried out the usual duties of Hurricane Observation. Two Jagger Earth Shock Recorders were kept in operation at the Grove Botanic Station during the year.

VIRGIN ISLANDS

42. PLANT AND SEED DISTRIBUTION

A small nursery is maintained on the Agricultural Station in Tortola. Plants and cuttings were distributed in the following quantities :—

Canes	8,000
Sweet Potato	29,520
Cassava	2,500
Elephant Grass	108,000
Coconut	80
Grafted Mango	6
Tobacco	3,100

43.

LIVESTOCK IMPROVEMENT**Cattle**

Red Poll x Senegal grade cattle are raised on the Agricultural Station for distribution to stock keepers. The paddocks on the station were extended during the year by the fencing of thirteen more acres which were planted up with Antigua Hay Grass, Elephant Grass and Guinea Grass.

The animals at the farm kept in good health. The weather was favourable and pastures were in excellent condition. Some of the young stock were showing a marked tendency towards "beef" rather than dual purpose characters. To correct this tendency a young $\frac{3}{4}$ -bred Red Poll x Senegal bull from a good milking dam was imported on loan from the Agricultural Department, Antigua, for mating with the $\frac{3}{4}$ -bred heifers in Tortola.

Two more $\frac{3}{4}$ -Red Poll x Senegal bulls bred at Tortola were sold to peasant stock keepers. There is a good demand for these animals.

Equines

A French Canadian Light Draught stallion and a Kentucky Jack were kept at stud. The latter was well used, but the former is not up to his work and provision is being made to replace him.

Sheep

The Black Head Persian grades have done well. One young ram was sold for stud purposes.

Pigs

The Berkshire boar died early in the year; luckily the sow had already been mated. She gave birth to eight young ones; a pair of which have been kept.

Goats

A pair of Anglo-Nubian goats were received from Trinidad via Antigua. These goats arrived in poor condition and the doe died several months after arrival. The buck is still in very poor condition but he is being used by the peasants.

Stud Services

Services of Government Stud animals for the year are as follows :—

<i>Name</i>	<i>Number</i>
Stallion "Census"	3
Jack "Col Donway"	34
Red Polled Bull "Teddy"	19
"Arthur"	10
Black Head Persian Sheep (Ram)	6
Anglo-Nubian Goat (Buck)	15
Berkshire Boar	1

44.

GENERAL

The department continued to supervise the marketing of livestock and the control of ticks by organised dipping. Agricultural shows were organized at North Sound on Virgin Gorda, at East End on Tortola, and at East End on Jost van Dyke. Pasture improvement classes were included in the programmes of these shows. Many areas were visited with the purpose of furthering pasture improvement, soil conservation and kindred matters.

APPENDIX VI

Statement of Receipts and Expenditure in connection with the marketing of canes from Nevis for the 1948 crop.

	Receipts \$ c.	Expenditure \$ c.
By first payment to growers on 2175 tons 7 cwt canes @ \$5.52 per ton ..		12,007 93
" shipping expenses		651 95
" portorage on chains, slings, trucks		11 00
" lighterage		12 00
" wages to clerical assistant		184 57
" supplies and incidentals		85 58
" wages of night watchman on pier		77 76
" rent of land at Newcastle		8 00
" lighterage on canes to St. Kitts		1,871 73
To sale of 1998 tons 8 cwt 3 qrs. canes and boatage allowance	\$14,148 96	
" cane bonus on 1998 tons 8 cwt 3 qrs. canes @ 96 cents per ton	1,918 50	
By refund to St. Kitts (Basseterre) Sugar Factory Ltd. of amount overpaid		119 92
" additional payment to growers on 2175 tons 7 cwt canes @ 47 cents		
per ton		1,022 41
" excess receipts		14 61
	<u>\$16,067 46</u>	<u>\$16,067 46</u>

APPENDIX VII

Statement of Receipts and Expenditure in connection with the marketing of Fahies and Sadlers cane crop for 1948.

	Receipts \$ c.	Expenditure \$ c.
1st payment to allottees at Fahies		12,097 91
" " " " " Sadlers		4,464 06
2nd " " " " " Fahies		1,768 60
" " " " " Sadlers		254 65
3rd " " " " " Fahies		848 83
" " " " " Sadlers		154 92
Bonus paid to labourers at Fahies		609 95
" " " " " Sadlers		231 42
Marketing Expenses Fahies and Sadlers		9,463 22
Deductions for rents due Sadlers	\$1,071.75	
Fahies	883.80	1,955 55
Deductions for amounts due for artificial maunres—		
Sadlers	\$ 775.94	
Fahies	1,411.18	2,187 12
Contribution to cost of supervision		480 00
" " " " " "		163 07
Fahies—2,979 tons 18 cwt. 2 qrs. @ \$ 6.78 per ton	20,203 88	
" " " " " " 11.62c. " "	346 38	
" " " " " " 96.00c. " "	2,860 74	
" " " " " " 52.88c. " "	1,575 98	
Sadlers—1,155 tons 18 cwt. 3 qrs. @ \$6.78 per ton	7,836 92	
" " " " " " 11.62c. " "	134 36	
" " " " " " 96.00c. " "	1,109 70	
" " " " " " 52.88c. " "	611 34	
	<u>\$4,679 30</u>	<u>\$4,679 30</u>

APPENDIX VIII

Statement of Receipts and Expenditure in connection with the marketing of peasants' cotton in Nevis
for the 1947—48 crop.

CLEAN LINT				Receipts	Expenditure
				\$ c	\$ c
To amount brought forward from 1946—47	..	..	..	302 25	
By expenses in cotton house	..	..	..		999 55
„ staff and messenger	..	..	..		223 21
„ fire insurance	..	..	..		117 40
„ sundry supplies	..	..	..		182 39
„ portorage	..	..	..		362 76
„ hand picking cotton seed for planting	..	..	..		1,217 90
„ purchase 5 tons seed from Montserrat	..	..	..		293 13
„ export duty	..	..	..		1,879 15
„ cess	..	..	..		1,879 15
„ pier dues	..	..	..		286 66
„ lighterage on bales to St. Kitts	..	..	..		446 16
„ payments for seed supplied by growers	..	..	..		337 76
„ forms	..	..	..		10
„ rent of Government warehouses	..	..	..		618 09
„ incidentals	..	..	..		36 51
„ repaid to Head VII—amount advances for hand picking and purchase of cotton seed for planting	..	..	..		1,511 03
„ ginning and baling 186,400 lbs. clean lint @ 4c.	..	..	..		7,456 00
„ 1st payment on 558,851 lbs. clean seed cotton @ 16c.	..	..	..		89,416 16
„ 2nd payment on above @ 2c.	..	..	..		11,177 02
„ grader in U.K. @ \$1.32 per bale (372)	..	..	..		491 04
To sale of 186,400 lbs. clean lint in U.K.	..	..	..	126,137 23	
„ refund by Raw Cotton Commission of lighterage paid on bales from Nevis to St. Kitts for shipment	..	..	..	446 16	
„ sale of 278,537 lbs. prime seed @ \$35 per ton	..	..	..	4,352 14	
„ sale of seed for planting	..	..	..	1,367 32	
„ Head VII—amount advanced for hand picking and purchase of seed for planting	..	..	..	1,511 03	
By final payment on 558,851 lbs. clean seed cotton @ 2½c.	..	..	..		13,971 27
„ amount carried forward	..	..	..		1,213 69
				134,116 13	134,116 13

APPENDIX IX

Statement of Receipts and Expenditure in connection with the marketing of peasants' cotton in Nevis
for the 1947—48 crop.

STAINED LINT				Receipts	Expenditure
				\$ c	\$ c
By expenses in cotton house	..	..	..		203 18
„ portorage	..	..	..		28 38
„ staff and messenger	..	..	..		216 56
„ lighterage on bales to St. Kitts	..	..	..		67 32
„ pier dues	..	..	..		39 98
„ sundry supplies	..	..	..		34 28
„ part payment of rent of Government warehouses	..	..	..		149 91
„ incidentals	..	..	..		7 82
„ ginning and baling 33,662 lbs. lint @ 4c.	..	..	..		1,346 48
„ advances on stained seed cotton 96,553 lbs @ 4c.	..	..	..		3862 12
To sale of stained lint in Nevis	..	..	..	152 15	
„ „ „ „ seed 126, 431 lbs.	..	..	..	987 74	
„ „ „ „ lint in St. Kitts—6,548 lbs.	..	..	..	2,357 28	
„ „ „ „ to Govt. of Virgin Islands—504.	..	..	..	181 80	
„ „ „ „ in U.K.—27,094 lbs.	..	..	..	8,128 20	
By refund by Raw Cotton Commission of lighterage paid on bales from Nevis to St. Kitts for shipment	..	..	..	67 32	
By additional payment on 96,553 lbs. stained cotton @ 6c. per lb.	..	..	..		5,793 18
„ amount carried forward	..	..	..		125 28
				11,874 49	11,874 49

SECTION IV.

Colonial Development and Welfare Schemes

45. Below are listed the various Colonial Development and Welfare Schemes which are being carried out by the Departments of Agriculture together with brief details of those which have not already been mentioned in earlier sections of the report.

LEEWARD ISLANDS

The following schemes are operated under the Federal estimates :—

Scheme D.32A & 32B. Appointment of Director of Agriculture, Leeward Islands. Free grants of £8,000 and £990. Mr. R. B. Allnutt arrived to take up the duties of this post in February, 1948. During the course of the year he visited Montserrat three times, St. Kitts, Nevis and the Virgin Islands twice each, Barbuda once, and attended meetings of the Sugar Technologists in Barbados and the West Indian Sea Island Cotton Association in St. Vincent.

Scheme D.726. Appointment of Chief Veterinary Officer, Leeward Islands. Free grant £6,000. This post was occupied by Dr. L. R. Hutson until the end of May when he went on transfer to Barbados. The post remained vacant for the remainder of the year.

Scheme R.54 & 54A. Control of Insect Pests. Free grants £4,750 and £220. Under an earlier scheme (D.90) an entomologist was appointed to investigate the insect pests of food crops in the Leeward and Windward Islands. Schemes R.54 & 54A provided funds for this work to be followed up by investigation of control measures, and the publication of results. The field work on pests was concluded in 1947, and an illustrated booklet entitled "The Insect Pests of Food Crops in the Lesser Antilles" by R. G. Fennah has been published. The scheme expired in September, 1948.

ANTIGUA

Scheme D.57 & 57A. Agricultural Development. Free grants of £27,810 and £1,450. These schemes, which provided temporarily for the extension of the field and marketing services of the department, were due to terminate in 1946 but sanction was given for most of the balance then in hand (£3,550) to be used to provide loans to ex-servicemen and others and the life of the schemes was extended till the end of 1948 for this purpose.

Scheme D.282. Land Settlement and Development Board. Free grant £82,100. See Section III, paragraph 21. Sanction is being sought for the extension of the life of this scheme, which was due to expire at the end of 1948.

Scheme D.465. Agricultural Development

	Free Grant	Loan	Total
(i) Establishment of a Central Experiment Station (See Section II, paragraph 11)	120,000	—	120,000 (A)
(ii) Staffing and other requirements of the agricultural department	30,000	2,000	32,000
This section provides the salaries of most of the field staff and some of the funds required for stud centres, soil conservation work etc.			
(iii) Rehabilitation of Estate Agriculture See Section III, paragraph 20.	13,834	39,166	53,000 (B)
Total	163,834	41,166	205,000

(A) Later reduced by £10,000; (B) Later reduced by £7,500
to make money available for other purposes under the ten-year plan.

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Scheme D.288. Government Dairy and Agricultural Station. Free grant £27,627 to which must be added £7,720 which was provided under D.186 which was merged with D.288. See Section II, paragraph 12. The scheme expired at the end of 1948, and will be maintained in future on local funds.

Scheme D.422 & 422A. Government Veterinary Services, St. Kitts. Free grants of £3,800 and £850. See Section III, paragraph 33.

Scheme D.54 Agricultural Development in Nevis. Free grant of £21,556. This scheme provided for the salaries of the staff of the agricultural department for five years and also for a part of the capital and recurrent expenditure on demonstration centres, roads and water supplies in Land Settlements and on stud centres and some experimental work. The life of the scheme was extended by two years, that is to the end of 1948; thereafter expenditure will be met from the local budget.

Scheme D.687 & 687A. Agricultural Development in Anguilla. Free grants of £5,550 and £655. This scheme provided funds for the establishment of a small agricultural station and demonstration centre in Anguilla. During the year a house for the Agricultural Instructor was erected on the 27-acre farm, also a bull-pen and boar-pen.

MONTserrat

Scheme D.31. Agricultural Development. Free grant of £19,829. Approved November 1941. This provided funds for the payment of salaries of departmental staff, for stud centres, soil conservation and some experimentation.

Scheme 666. Otway Peasant Land Settlement. In this scheme two earlier ones (D.348 and D.447) were merged. Free grant of £1,000 and interest free loan of £28,650. The funds provided in 1944—45 under the two earlier schemes were utilised to buy and partially develop the Otway estate for peasant settlement. See Section III, paragraph 37. A sum of £11,450 has not yet been taken up and proposals for the recasting of the scheme are under examination. In the meantime current expenditure has been met from local funds.

VIRGIN ISLANDS

Scheme D.293. Agricultural Development. Free grant £27,979. Approved in January 1944. It originally financed the entire work of the agricultural department including staff salaries. In 1947 certain items were transferred to the local budget, but the scheme still continued to assist in the maintenance of the agricultural station and other livestock improvement work such as assistance to keepers of accredited sires. It lapsed at the end of 1948.

SECTION V.

Summary of Legislation Changes

46. A number of Statutory Rules and Orders were made controlling the movement of stock due to outbreaks or suspected outbreaks of anthrax. Most of these were of an ephemeral nature and were later revoked. The following rules and orders of more permanent significance were made:—

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- S.R. & O. No. 5. Infectious Diseases Order, 1948. Anthrax declared an infectious disease within the meaning of the Infectious Diseases Ordinance of 1905.
- S.R. & O. No. 6. Diseases of Animals Regulations, 1948. Requires the notification of diseases in animals, the production of animals for inspection, and the vaccination of them if necessary.

Apart from the foregoing, legislation was confined to such annually recurring matters as the fixing of close seasons and planting seasons for cotton.

R. B. ALLNUTT,

Director of Agriculture.

September, 1949.

